

Ability In Relation To School Progress

An Analytical Study of the Relation between School Appraisal
of Pupil Educational Development and Objective Measures
of Pupil Achievement and Ability.

By

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Celine Remy

*To the memory of my
Father and Mother
whose faith and confidence in me
never faltered, this inadequate
return is offered.*

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PREFACE

The problem of promotion is not peculiar to the elementary school. In one form or another it appears at stated intervals in the academic year throughout the entire educational career of any individual. From the time when a child is promoted to the first grade from the kindergarten, to the time when he is admitted to college from the high school the process continues, like the mills of the Gods, "grinding slowly, but exceedingly small."

It may be that an exaggerated emphasis is placed upon the mere fact of promotion. Certainly many important values in the educational progress of a pupil through school are overlooked in the confusion of promotion time. In the last six years the author has asked many school superintendents, principals, and teachers for a philosophy of promotion. Not once has a clearly defined policy been outlined, nor a definite curricular goal been set. Promotion appears to be a quite haphazard matter, a sort of least common denominator of the factors of chronological age, physical maturity, attitude, time spent in the grade, knowledge of the subject matter of the grade and ability to do the work of the next highest grade. This least common denominator, however, is not obtained by the objective method of an algebraic formula, but by the subjective method of the teacher's opinion of these factors. Further, this solution of a pupil's problems is usually obtained by a teacher who has known him at most one year, generally only one semester.

So important a matter as stamping a child with success or failure should not be left to the information which a teacher may gain in one semester about a pupil's abilities, aptitudes and interests. What has been called the principle of "present worth" in a pupil is perhaps the most important feature of any promotion policy. By this is meant all that a pupil has become in the educational process up to this time; a complete summary of his intellectual, emotional and physical realities and potentialities, founded upon accurate, objective, comparable evidence, that is not influenced by his particular reactions at a given instant. In other words, what is needed to guide a pupil successfully through this process of education is a continuing study of his possibilities and achievements from the beginning of his school career.

This study is based on such continuing records of two groups of pupils for three years of their educational history. It is a very modest attempt to show that the school's adjustment of a pupil's educational problem is not always consistent either with his past achievement or present worth, and to show that a better adjustment is possible in the use of the new instruments of measurement.

Promotion will undoubtedly continue to be the symbol of academic success. As such it should be evidence of real educational progression rather than mere educational conformity.

Such a study as this is never accomplished by the efforts of a single individual. It involves debts, not all of which can even be acknowledged. To the many students in my classes at The George Washington University who assisted with the laborious and inglorious task of scoring tests and tabulating the results my thanks are due. There are other obligations too numerous for other than this general acknowledgement. But I must at least express my gratitude to certain persons without whose help and encouragement this investigation could not have finished:

To Dr. William S. Learned, of the Carnegie Foundation for the Advancement of Teaching, not only for permission to use the Pittsburgh records of the Pennsylvania Study, but also for reading the manuscript and for his constructive criticism and friendly encouragement;

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A. L. R.

15 May. 1933.

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CHAPTER I

INTRODUCTION

There is perhaps no problem more difficult nor more important to school administrators than the regulation of a pupil's progress through school. Whom to promote, when to promote, how to promote have become major dilemmas for the thoughtful school executive who wishes to formulate for his system a policy of pupil advancement which shall be free of the mechanizing routine of promotion by the calendar and afford sufficient flexibility to meet the needs of pupil differences.

The graded school system of America has been a natural evolution. It has logically proceeded from the individual instruction current until the 17th century through the innovations of group teachings introduced by Lancaster and Bell, until it reached the state idealized under the later 19th century theorists, "one book, one lesson, one teacher for all in the same grade". Thus there has been handed down to the present day an organization that grew mainly out of the convenience of having all pupils using the same text recite together. When a pupil had finished the first reader or the fifth, he passed on to the group using the book next in line.

As education became a matter of the state, the necessity of grouping pupils became more acute, both in order to take care of the ever increasing numbers in the school population, and also that the expense might be kept at a minimum. It was a normal development, therefore, to put together all those children who entered school for the first time and advance them regularly, one grade a year. Experience had shown that most pupils took about one school year to complete one "reader"; therefore, it seemed expedient to classify pupils who were in their first school year as the "first

grade", those who were in the second school year as the "second grade", and so on, up the educational ladder in the original lock-step. Tradition and administrative economy are thus responsible for the promotion practices of the grade system.

The prevailing confusion surrounding the grade concept in present day school administration makes it difficult to analyze the real meaning of the term. Yet since promotion is a direct outcome of classification by grades, some clear understanding of the fundamental basis of a school grade must be had. A survey of the discussion of this subject yields two main concepts of this division of school experience.

One theory is that a school grade is an indication of a certain level of maturity, signified in general by chronological age. This concept assumes that all children enter school at approximately the same age and, progressing at about the same rate, will finish school at the same age. Thus promotion really becomes a matter of the calendar, since every child, in theory if not in practice, advances one grade a year. Most age-grade¹ tables are built around this interpretation, and six years of age with year to half-year variations above and below this point, has by general acceptance become the normal age for the first grade. Thus, seven to eight years is the normal age for second grade, eight to nine is normal for third grade, and so on.

The other interpretation of a grade is that it signifies a certain level of work, or a stated amount of curriculum materials graded as to difficulties, for the particular place in the course of study assigned to it. Growing out of classification by text-books, different units in the educational whole were blocked off, placed together and set up as the criterion of the second grade, or the fifth grade, as the case might be. This plan assumed a homogeneity of interest, ability and achievement, because of the homogeneity of age which had been obtained by advancing pupils through these prescribed units a year at a time. The requirements of the grade, the

¹ cf. Strayer—Englehardt School Record Series, C. F. Williams Co., Albany, N. Y.

standards of passing or failing, were not uniform, nor were they the result of thoughtful consideration. Like Topsy, they just grew, and growing, became the end, rather than the means.

It is not to be understood that either of these concepts ever was or could be mutually exclusive. The fact that they could not in practice work independently of each other, accounts for the confusion now beclouding the problem of pupil progress. The law had set the age for admission to school. Administrative expediency and economy had set the level of grade material. The two must work together, for good or ill.

Supt. W. H. Maxwell, of New York City, published one of the first age-grade tables to be included in a superintendent's report. With startling simplicity he showed that although all children may enter school at about the same age, they certainly do not all progress at the same rate. It may be that familiarity with the situation has dulled its acuteness, but his figures, 39 per cent¹ of over-ageness throughout the New York City schools, do not seem so shocking today. In 1894, however, the "awful situation in New York" was common talk. A flood of age-grade tables followed, and discussions as to what should be the limits of over-ageness were current. Inadequate as age-grade tables are to prove the efficiency of a school system, to Supt. Maxwell is due whatever credit may be for destroying the faith in this maturity concept.

The futility of basing classification and promotion on courses of study and blocks of curriculum material prescribed for all children at certain levels, was emphasized by the growing recognition of individual differences. Ayres (2)² effectively brought to public notice conditions of which progressive administrators had long been aware. Some of them indeed had been seriously trying to meet the demands of the situation. Whipple³ says, "... it became increasingly evident to thoughtful school administrators that the econo-

¹ Nifenecker—"Pupils' Progress through the Grades", p. 16.

² 23rd Year Book, National Society for the Study of Education, Part I, p. 8.

mies of administration secured by the regular grade system were purchased at a high price when the needs and capacities of individual pupils, both dull and bright, were considered.

"The administrative problem became, then, how to retain the advantages of a comprehensive grading scheme with systematic promotion and at the same time to introduce a reasonable amount of flexibility."

As long ago as 1868, Supt. W. T. Harris, of St. Louis, was seeking for a solution to this problem.¹ From then until today solutions are still being sought and various remedies tried. The Dalton plan², the Decroly method and Winnetka plan, as well as various methods of individualizing instruction combining points from different plans, are all in use, in a sincere and scientific attempt to appraise pupil educational development accurately and fairly. The current trend in educational thought is to allow each individual to enter school at a given age and proceed on the basis of his present achievement at the rate best suited to his abilities. The real problem is to reconcile this need of the individual with the demand for administrative efficiency and economy.

In the days when chronological age and teachers' marks were the only standards the school had on which to promote pupils, it is no wonder that waste, human and financial, was present in school administration, nor that the individual was lost in the mass. But today, when more accurate measures are available to every school principal and teacher the school should have a thorough-going knowledge of the mental and scholastic possibilities of every pupil under its care. It is unfair to an individual if he is unfitted and unprepared for the next grade to promote him because of docility, or conformity, or physical size; and it is equally unfair, if he demonstrates consistently achievement and ability far in excess of the grade in which he is merely marking time, not to promote him. On the one hand, he

¹ The waste in education occasioned by retardation and elimination of pupils has been surveyed in masterly fashion by many writers. See complete bibliography.

² For a comprehensive discussion of the various plans in use for adapting the schools to individual differences, see 24th Year Book, National Society for the Study of Education, Part II.

is being trained in habits of failure, humiliation and inferiority; and on the other, encouraged in mediocrity, carelessness and disinterest. Tests such as the Stanford Achievement Test and the National Intelligence Test show that pupils grow at their own pace, quite independently of any over or under-ageness for the grade in which the school has placed them.

The main theme of this study is the progress of pupils through school. The investigation is concerned with promotion from one grade to another, the bases on which this promotion is made and the relation between the school's appraisal of a pupil's educational development and objective measures of his ability and achievement.

Some of the questions which this investigation should answer at least in part, are these:

1. What is the degree of consistency between the objective measures of a pupil's ability and achievement, the school's appraisal of his educational development and the regularity of his progress through school?
2. What is the relation between chronological over-ageness and under-ageness and promotion; between mental over-ageness and under-ageness and promotion; between educational over-ageness and promotion and each of these with each other?
3. If cumulative case histories had been available, could the counsellors of these pupils have effected for them a better adjustment to their school environment?

Promotion, here, as in most studies dealing with the problem, is synonymous with progress through school, the passing from one grade to the next. It is the recognition the school gives for satisfactory completion of the work of any grade; conversely, non-promotion is the penalty for failing to give a creditable performance. It may not be possible to formulate a policy of promotion that will insure progress based on an appraisal of a pupil's achievement in terms of results, tangible and comparable. It may not even be desirable that such a uniform promotion policy be developed. However, if grade promotion continues to be the symbol for grade achievement, then it should be a recogni-

tion of progressive educational achievement and development instead of an indication of mere course completion and a sufficient number of passing marks.

This investigation will seek to discover the relations between de facto promotions and measured achievement, intelligence, chronological age, educational age, teachers' marks and other pertinent factors. On the basis of the data secured we shall attempt to show that the school's adjustment of a child's educational difficulties is not always consistent either with his present record or his past history. After all, education is an individual matter. Knowledge is not handed down intact even to the brightest child, without some effort on his part. Pupils learn individually, each as a result of his own activity. Therefore, their progress should be as individuals, based on what they have actively and honestly accomplished, and the distance they have advanced from their initial starting point.

CHAPTER II

NATURE AND SOURCES OF THE DATA

The validity of an investigation of this kind is dependent upon obtaining cumulative information about the same pupils. To know what the real promotional practice of a school is, it is not sufficient to make a survey of an entire school at any one time, tabulating the age-grade distributions and promotion percentages for one particular year. If, however, one group of children can be followed for a sufficiently long time to get a definite picture of their developmental history, then it is possible to make a statement regarding their advancement through school in relation to their tested achievement and ability, and to compare their measured educational increase with the school's estimate of their progress.

I. Data

The data upon which this study is based are derived from the records of two groups of pupils:

1. 391 pupils in the white public schools of Washington, D. C., who were in the low fourth grade in October 1926.
2. 474 pupils in the Pittsburgh, Pennsylvania, public schools who were in the low sixth grade in January 1928. Of this number, 44 were colored children.

The study was originally planned to include only the Washington data. However, when the opportunity was offered to include a similar group from another school system, it was felt that whatever conclusions were reached would be materially strengthened by supporting facts not only from another system, but from different grades. The material from Pittsburgh is a part of the data assembled under Section 1 of the current educational enquiry being conducted in Pennsylvania by the Carnegie Foundation for the Advancement of Teaching. The Washington information was col-

lected for the purposes of this study through the courtesy and cooperation of Dr. Frank W. Ballou, Superintendent of Schools of Washington, D. C., and Miss Jessie La Salle, Assistant Superintendent of Schools of Washington, in charge of the Bureau of Educational Research.

The Washington group, as stated above, consists of 391 pupils who were in the low fourth grade in October 1926. These pupils represent the remainder of approximately 1000 children who were first tested in 1926. The final number does not indicate that 600 of the original 1000 pupils were lost entirely; these 391 pupils were the ones who had taken all ten tests and were therefore the ones retained for this study. To the extent that a complete record makes for selection, they are a selected group. It is safe to say, from careful estimates and checks, that at least 300 more of the first group were still in the public schools of Washington. Of the remaining 300, some had transferred to parochial schools, a few, of course, had died, and the others were members of the "floating population" of Washington—the children of army and navy people, or public officials, who one year bring their families to the capital and the next, especially if it is the short session of Congress, will leave them at "home".

It was decided to begin this study in the low fourth grade for two reasons:

1. It was thought the results would be more comparable if the same test were used throughout the experiment. Therefore, since the Stanford Achievement Test had been selected, it seemed desirable to keep the grade limits of the investigation within the scope of either the primary or advanced examination. To keep within the limits of the primary examination set the study too early.
2. Having decided to keep within the limits of the advanced examination, it was thought best to organize the group so that except for possible accelerations, no appreciable number would be in the junior high school, where the promotion problem presumably becomes one of subject promotion.

Accordingly, in October 1926, all the pupils in the low fourth grade in 40 elementary white schools in Washington were tested with the Stanford Achievement Test and the National Intelligence Test. All of the tests were administered by the staff of the Bureau of Educational Research of the Washington school system, under the careful supervision of Miss La Salle. Thus, the examinations were given under as uniform and advantageous conditions as possible. Since it was not an "extra" chore imposed on the class by an unfamiliar outsider, the morale of the class was in no way jeopardized. The pupils in these schools know the examiners from this department of the administration; taking a test is not an unusual or strange procedure; therefore, the results from this point of view have an additional accuracy. The tests were scored under the supervision of the author and all arithmetical computations were checked twice.

Table 1 shows the testing periods, the tests used and the grade locations of this group at each period.

TABLE 1
NUMBERS OF PUPILS TESTED IN A GIVEN GRADE LOCATION, WITH STANFORD ACHIEVEMENT TEST AND NATIONAL INTELLIGENCE TESTS ON DATES AS INDICATED. WASHINGTON DATA.
391 CASES

Grades	Oct. 1926 St. Ach. Test Adv. Exam-A NIT Scale A1	Mar. 1927 St. Ach. Test Adv. Exam-B NIT Scale B1	Oct. 1927 St. Ach. Test Adv. Exam-A NIT Scale A2	Mar. 1928 St. Ach. Test Adv. Exam-B NIT Scale B2	June 1929 St. Ach. Test Adv. Exam-A NIT Scale A3
Low 4	391	21	4	1	
High 4		343	34	3	
Low 5		27	274	48	1
High 5			66	253	10
Low 6			13	68	55
High 6				16	215
Low 7				2	78
High 7					21
Low 8					10
High 8					1
Totals	391	391	391	391	391

The Pittsburgh data have been selected from the records of that city which form a part of Section I of the Study of the Relations of Secondary and Higher Education in Pennsylvania.¹ Section I of this investigation comprises about twenty cooperating school systems of all sizes and types, which in September 1928 enrolled their low seventh grade classes in the project. Of these cooperating centers, the largest was the city of Pittsburgh, which enrolled the entire low seventh grade in the undertaking. This group comprised some 4000 odd pupils in approximately 60 elementary schools or junior high schools.

The specific purpose of this section of the Study as stated in the report for 1928,² was "to turn as powerful a light as possible on a large number of children who are beginning their adolescent education; to discover as many of their individual traits,—mental, social, and physical—as may be found of use in explaining and guiding their education; to express these findings, so far as possible, in terms of standard measurements or in accurate statements of fact that leave no doubt as to their meaning; and to organize the data into a convenient cumulative record that within small compass shall give a trustworthy summary of a child's performance over a period of at least six years." A comprehensive testing program has been carried on by the units participating in the Pennsylvania Study, so that there was available an unusual collection of comparable measures and records for the same group of children over the three years that have elapsed since the project was initiated.

The entire active membership of the Pennsylvania Study Group in five high schools on June 1, 1931, was chosen for this investigation on the basis of only one selective factor: a complete test record. Here again to the extent that a complete record makes for selection, this is a "selected" group. It is no doubt more of a selective factor with this class than with the Washington class, since the Pittsburgh

¹ For history and information of this Study, see various reports published by the Carnegie Foundation for the Advancement of Teaching, New York City.

² "Program for a Study of the Relations of Secondary and Higher Education", p. 2.

pupils are older, and if they stayed in school at all, they would probably have a complete record. The two situations are not comparable in this respect; in Washington, since the experiment was a courtesy given to the author by the school system, many pupils still in school were not followed up because of administrative difficulties; but in Pittsburgh, since the school system as a whole was committed to the Pennsylvania Study, if a child remained in school he was reached.

The enrollment in the total Pittsburgh group as of November 1, 1931, showing the percentage of elimination from this section of the Pennsylvania Study, is presented in Table 2. From these figures it is possible to estimate the size of the original group, of which these 474 cases are the residuum.

TABLE 2
NUMBER OF PUPILS ENROLLED IN PITTSBURGH ENQUIRY
GROUP OF THE PENNSYLVANIA STUDY
NOVEMBER 1, 1931

Location	Number	Per cent of Original Group
L 8	2	
H 8	9	
L 9	54	
H 9	242	
L 10	1916	
H 10	127	
L 11	6	
Total—Academic Classes	2356	54.6
Trade and Vocational Schools	350	8.11
Total Still in School	2706	62.71
Withdrawn	1609	37.29
Total Original Group	4315	100.00

Four Stanford Achievement Tests were given to the Pennsylvania Study Group in Pittsburgh, the first one in January 1928, when the children were just finishing the low sixth grade, and the others at varying intervals thereafter until

January 1931, when the grade location for those who had been regularly promoted was low ninth. Table 3 shows the testing periods, the tests used and the grade locations of the selected group at each period.

TABLE 3
NUMBERS OF PUPILS TESTED IN A GIVEN GRADE LOCATION WITH STANFORD ACHIEVEMENT TEST AND OTIS INTELLIGENCE TEST ON DATES AS INDICATED.
PITTSBURGH DATA
474 CASES

Grade	Jan. 1928 St. Ach. Test Adv. Exam-A	May 1929 St. Ach. Test Adv. Exam-B Otis S.A.-Inter.	Jan. 1930 St. Ach. Test Adv. Exam-X	Jan. 1931 St. Ach. Test Adv. Exam-W	May 1931 Otis. S.A. Test Higher Exam.
L 6	474				
L 7		14			
H 7		452	21		
L 8		8	430	2	
H 8			22	32	4
L 9			1	415	44
H 9				23	401
L 10				2	23
H 10					2
Total	474	474	474	474	474

In Pittsburgh the tests were not given by the staff of the Department of Curriculum Study and Research, but by the class-room teachers, under the general supervision of the Department. The tests were sent out to the schools from the central office with detailed instructions for administering and scoring.¹ All tests were scored by the teachers who administered them. The first Stanford Achievement Test, given in 1928, was a part of the city wide survey of the Pittsburgh public schools. The results of this survey are reported in a bulletin of the Research Department.² The

¹ For complete description of instructions to examiners, see *Curriculum Study and Educational Research Bulletin*, v. 3, No. 2, Nov-Dec. 1928. The Board of Education, Pittsburgh, Pa., pp. 108-117.

² *Ibid.*

other tests were given as a part of the testing program of the Pennsylvania Study. They were issued by the Department of Curriculum Study, but no further supervision was exercised by the Department. The tests were sampled for scoring and computation errors by the clerical staff of the Study. Where the per cent of errors exceeded 1 per cent, the tests in that school were re-scored and checked.

All the data from the two groups were assembled and submitted to the same statistical treatment. Since both the old and new Stanford Achievement Test had been used in Pittsburgh, and since the main emphasis in the study was to be on school progress and grade status, the composite scores on these tests were transmuted into grade equivalents according to the grade scale published in the manual of directions.¹ Whenever the term "grade equivalent" or "grade achievement" is used in this paper, it is to be interpreted to mean the grade equivalent of a composite Stanford Achievement Test score; similarly "grade status" or "grade location" or "grade position" shall indicate the particular school grade in which a pupil is enrolled at a given time. The composite score on this test is perhaps the best all-round index of a pupil's acquisitions that can be obtained. The test itself was prepared with the definite aim of constructing an instrument that would measure effectively "practically all of the curriculum from grades two to eight".² The criterion of school success used in standardizing the examination was "the increase from grade to grade in the per cent of pupils passing it".³ Therefore, while grade norms are admittedly less valid than age norms, just as "grade status" is no real indication of a pupil's ability, yet for the purposes of studying the degree of consistency of promotion with achievement, the grade equivalents on this test furnish a meaningful, comparable and accurate measure.

One other transmutation of scores should be explained. The marking system in the elementary schools in Washington at the time of this study was a four point scale, in-

¹ Manual of Directions, revised, Standard Achievement Test, pp. 41-45.

² Ibid. p. 7.

³ Ibid. p. 8.

licated by the letters A, B, C, and D, where the marks A, B, C were passing marks and D was a failing mark. In Pittsburgh the scale was a five point scale, signified by the letters A, B, C, D and E, on which A was the highest and D the lowest passing mark and E indicated failure. Therefore, in order to make these marks comparable and also to obtain a composite mark that could serve as an indication of school success, arithmetical values were arbitrarily assigned according to the following scale: A-12; B-9; C-6; D-3; E-0. The composite score was secured by totaling the values of all the marks received by a pupil and dividing by the number of marks.

This composite mark is used to signify the school appraisal of a pupil's ability and academic achievement, and as such, constitutes supposedly the fundamental basis for all decisions regarding his advancement through school. It is admitted that other factors, such as personality, physical maturity and development, health and attitudes play a large part in school success, but in the last analysis, pupils pass or fail on the basis of a teacher's judgment of their knowledge.

Character of the Enquiry Groups.

I. Pittsburgh

Table 4 gives a picture of the quality of the Enquiry Group in that city in January 1928. It summarizes the means and ranges of the chronological and educational ages, and the Stanford Achievement composite score grade equivalents.

In this section of the investigation in January 1928, the chronological age span was approximately six years. Pupils as young as nine years and three months old were working side by side with pupils as old as fifteen, in a grade the normal age limits of which are ten to eleven years. The educational age range of these same pupils was six years, with a mean educational age of twelve years and four months.

TABLE 4
RANGES, MEANS AND STANDARD DEVIATIONS OF
CHRONOLOGICAL AND EDUCATIONAL AGES, STAN-
FORD ACHIEVEMENT GRADE EQUIVALENT
AND COMPOSITE SCHOOL MARKS.
PITTSBURGH—JANUARY 1928
474 CASES

Measure	Mean	S. D.	Range
Chronological Age	11:9	10.0	9:3 - 14:11
Educational Age	12:4	11.32	10:0 - 16:7
Stanford Achievement			
Grade Equivalent	6.5	0.91	4.0 - 10.0 + ¹
Composite Marks	7.7	1.82	0 - 12

Note: In all tables a colon will be used to indicate the division between years and months; the decimal point, between months and tenths of months. Read 11:9—eleven years nine months; 11.32—eleven months and 32/100.

The mean achievement measured by the Stanford Achievement Test was equivalent to the level of high sixth grade performance; individual achievement within the group extended from a performance normal for the low fourth grade to an accomplishment comparable to that of the low tenth grade. The average mark of these pupils was about B+, with a range from complete failure to a perfect record, subjectively measured by teachers' ratings! This great variability in age, ability and achievement, subjectively and objectively appraised, was classified by the school within the limits of one half grade: all these pupils were just finishing the low sixth grade.

However, contrasted with the range of attainment for the entire low sixth grade of Pittsburgh, this small group seems to be a fair sample of the whole. The percentages of grade misplacement for the Study group and the low sixth grade population of the whole city on the basis of the city wide testing results in January 1928 are shown in Table 5.

¹ The scale of Grade Equivalents for the composite score on the Stanford Achievement Test does not go above the tenth grade; "10.0+" therefore, is the value given to all composite scores 82 and above for Forms A and B, or 102 and above for Forms X and W. Grade as defined in Stanford Achievement Test Manual of Directions, p. 42-3, Table 5, for Forms A and B; p. 6, Table 2. New Stanford Achievement Test Manual of Directions for Forms X and W.

TABLE 5
 NUMBERS AND PERCENTAGES OF PUPILS ABOVE AND
 BELOW SCHOOL GRADE STATUS (L6) ON THE BASIS
 OF STANFORD ACHIEVEMENT TEST RESULTS FOR
 ENQUIRY GROUP AND TOTAL LOW SIXTH
 GRADE POPULATION.
 PITTSBURGH—JANUARY 1928

Amount Above Or Below Grade Status	Total Low Sixth Grade		Enquiry Group	
	No.	Per Cent	No.	Per Cent
3 grades below	1	0.02		
2½ grades below	12	0.28		
2 grades below	52	1.23	1	0.21
1½ grades below	200	4.70	7	1.48
1 grade below	575	13.54	40	8.44
½ grade below	979	23.05	86	18.14
At Grade	697	16.41	118	24.89
½ grade above	620	14.60	72	15.19
1 grade above	635	14.95	87	18.36
1½ grades above	251	5.92	29	6.12
2 grades above	141	3.32	21	4.43
2½ grades above	46	1.08	8	1.69
3 grades above	18	0.43	2	0.42
3½ grades above	15	0.35	2	0.42
4 grades above	5	0.12	1	0.21
Total	4247	100.00	474	100.00

From these figures it will be noted that as a matter of fact, there was a greater amount of misplacement throughout the city in the low sixth grade than there was for the small sample used in this study. Therefore instead of this spread of abilities denoting a group either unusually high or unusually low, it seems logical to consider this group a representative one.

Another comparison can be made that will also indicate that these pupils were not unusual or exceptional. This is the comparison between the percentage of chronological over-ageness and under-ageness for these pupils and for comparable groups of pupils in the same city as well as throughout the state. Here again, the Enquiry Group shows a larger percentage of pupils at normal age for grade, and a smaller percentage of those who were over or under age than does the regular grade either in the same city or

in the state as a whole. The pupils on whom this investigation is based seem to be graded more accurately according to the standards of the school than is the sixth grade as a whole.

Table 6 shows that about sixty-nine per cent of the Enquiry Group are of normal age for the grade status; about twenty-three per cent are too old for the low sixth grade and about eight per cent are too young for this classification. On the other hand between fifty-two and fifty-three per cent of sixth-grade pupils in Pittsburgh as well as in the state of Pennsylvania are accurately placed according to chronological age norms; between thirty-six per cent and forty-one per cent are too old for their grade, while from seven per cent to eleven per cent are too young.

TABLE 6
PERCENTAGE OF CHRONOLOGICAL OVER-AGENESS AND
UNDER-AGENESS IN PUBLIC SCHOOLS OF THE
STATE OF PENNSYLVANIA, THE CITY OF
PITTSBURGH AND THE PITTSBURGH
ENQUIRY GROUP¹

	Pennsylvania 1929-30		Pittsburgh 1929-30		Pennsylvania 1929-30		Pittsburgh 1929-30		Enq. Gr. Jan. 1928	
	Grades 4-9		Grades 4-9		Grade 6		Grade 6		Grade 6	
	No.	%	No.	%	No.	%	No.	%	No.	%
Normal Age	529950	54.91	27205	54.90	92559	52.78	4434	51.85	326	68.78
Over-age	312373	32.37	17810	35.94	63837	36.40	3482	40.72	109	22.99
Under-age	122798	12.72	4536	9.16	18975	10.82	635	7.43	39	8.23
Total	965121	100.00	49551	100.00	175371	100.00	8551	100.00	474	100.00

¹ Figures for Pennsylvania and Pittsburgh by courtesy of the Child Accounting Division, State Department of Public Instruction, Harrisburg.

Likewise, when these pupils are viewed in relation to the national norms supplied for the Stanford Achievement Test, they are found to represent an average low sixth grade class, varying only a few months in either direction. From Table 7 it will be seen that the Stanford Achievement Test chronological age norm for the low sixth grade is twelve years; the mean chronological age for the Enquiry Group is eleven years and nine months. The Stanford Achievement Test educational age norm is also twelve years; the mean educational age for these pupils is twelve years and four months.

TABLE 7
 MEAN CHRONOLOGICAL AGE AND EDUCATIONAL AGE
 COMPARED WITH STANDARD AGE NORMS FOR A
 GIVEN SCHOOL GRADE STATUS.
 PITTSBURGH JANUARY 1928
 474 CASES

School Grade Status	Chronological Age		Educational Age	
	Stanford Norm	Pittsburgh Mean	Stanford Norm	Pittsburgh Mean
Low 6	12:0	11:9	12:0	12:4

To summarize these facts briefly: in this section of the study is presented a group of approximately five hundred pupils, who are a fair sample of the total population from which they were selected. They are on the average a few months younger chronologically and a few months more advanced educationally than the national standard norms for the low sixth grade. The developing educational histories of these children will show the relation between their school progress and their ability and achievement both objectively and subjectively measured.

II. Washington

Table 8 presents a summary of the various measurements of this group of pupils in the low fourth grade, showing the means, standard deviations and range of scores.

These pupils ranged in chronological age from seven years and six months to thirteen years and three months, an age span of six years within one grade, the normal age limits of which are nine to ten years. The mean mental age is ten years two months. This is seven months higher than the mean chronological age, and four months lower than the mean educational age.

Closer analysis of Table 8 reveals a group of pupils appraised by the school as of low fourth grade ability and achievement, who range in intelligence from an I. Q. of six-

TABLE 8
RANGES, MEANS AND STANDARD DEVIATIONS OF
CHRONOLOGICAL, EDUCATIONAL AND MENTAL
AGES, I. Q.'s, STANFORD ACHIEVEMENT AND
MENTAL AGE GRADE EQUIVALENTS.
WASHINGTON—OCTOBER 1926
391 CASES

Measure	Mean	Standard Deviation	Range
Chronological Age	9:7	10.55	7:6 - 13:3
Mental Age	10:2	14.06	8:6 - 14:1 ¹
Educational Age	10:6	8.2	8:4 - 13:3
Intelligence Quotient	107.3	16.71	60 - 159
Stanford Achievement			
Test Grade Equivalent	4.7 ²	0.51	3.0 - 6.9
Mental Age Grade Equivalent	4.5 ²	0.89	3.0 - 7.9 ¹

Note: In all tables a colon will be used to indicate the division between years and months; the decimal point, between months and tenths of months. Read 9:7—9 years 7 months; 10.55—10 months and 55/100.

ty, which represents at least inferior ability, to an I. Q. of one hundred fifty-nine, which indicates "very superior" ability.³ In achievement, as measured by the Stanford Test, the pupils vary within the group from those who achieve a level of performance equal to that of the low third grade, to those who secure scores at the level of the high sixth grade. Chart 1 presents this situation with startling clearness. Of the three hundred and ninety-one children in the group, only one hundred and six, or about twenty-seven per cent, are in the grade corresponding to their demonstrated level of performance; including those pupils testing one-half grade above and below their school grade location, there are approximately sixty-seven per cent. Beyond these points there are ten whose achievement lags behind their grade position one whole grade; sixty-six equal the average achievement of pupils in the low fifth grade, and three, academically at least, are about ready for the junior high

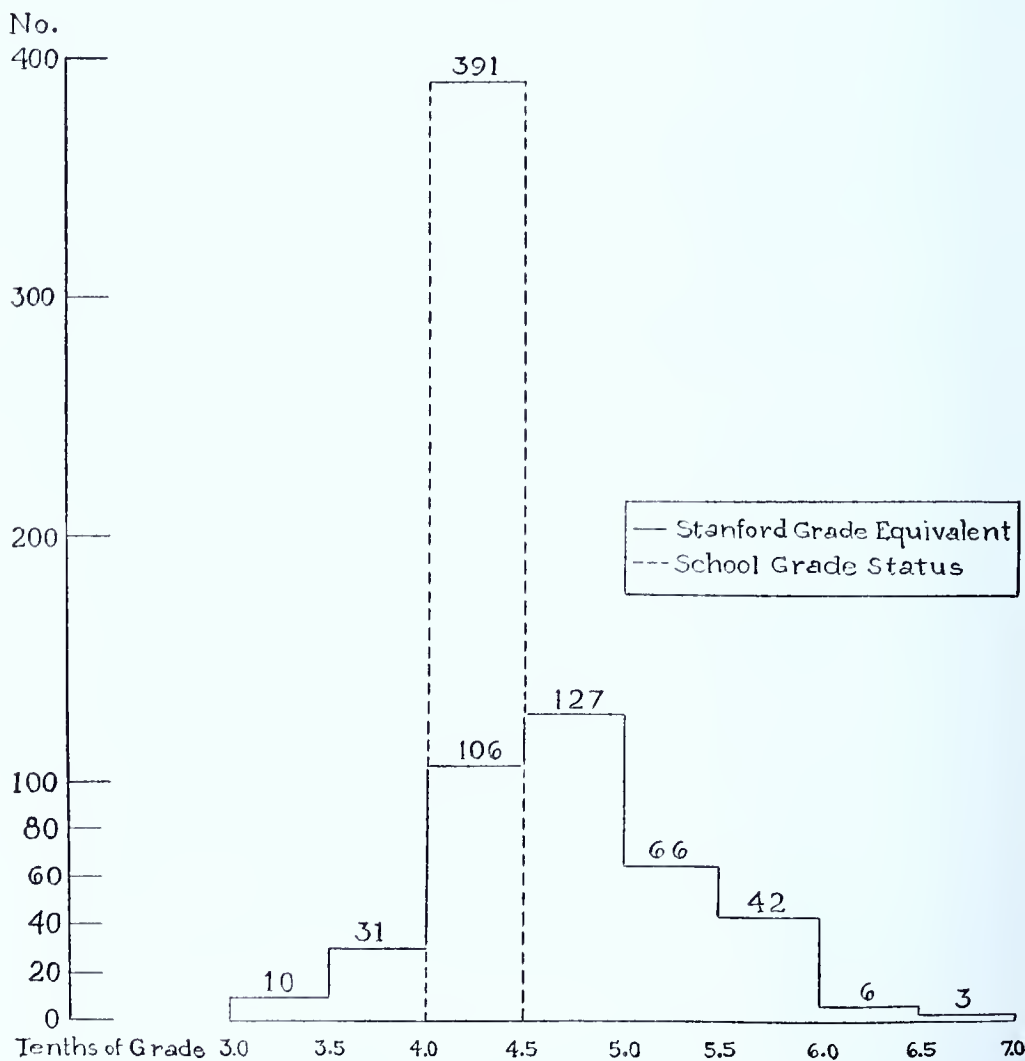
¹ A few of the raw scores on the original National Intelligence Test were lower than the low limiting score in Tables 3 and 5, Manual of Directions, (revised) for the National Intelligence Test, pp. 37-9.

² Grade as defined Stanford Manual of Directions, p. 42-3, Table 5.

³ Terman—The Measurement of Intelligence, p. 79.

CHART 1

Stanford Achievement Test Grade Equivalents and Grade Status
Washington - October 1926
391 Cases



school. Expressed in percentages, the amount of misplacement in this group of low fourth grade pupils according to the Stanford Test results, is shown in Table 9.

TABLE 9
NUMBERS AND PERCENTAGES OF PUPILS ABOVE AND
BELOW SCHOOL GRADE STATUS (LOW FOURTH) ON
THE BASIS OF STANFORD ACHIEVEMENT
TEST RESULTS
WASHINGTON—OCTOBER 1926
391 CASES

Amount Above Or Below Grade Status	No.	Per Cent
1 grade below	10	2.57
½ grade below	31	7.93
At grade	106	27.1
½ grade above	127	32.48
1 grade above	66	16.88
1½ grades above	42	10.74
2 grades above	6	1.53
2½ grades above	3	0.77
Total	391	100.00

Equal or greater variability is found in the distribution of the chronological ages of the pupils. That the percentage of over-ageness in this group, however, is not higher than that for the city as a whole can be seen from Table 10, which gives comparative figures on this factor.

TABLE 10
PERCENTAGE OF CHRONOLOGICAL OVER-AGENESS AND
UNDER-AGENESS IN THE WASHINGTON PUBLIC
SCHOOLS¹ (WHITE) AND ENQUIRY GROUP.

	Washington Public Schools 1930-31.				Enq. Gr. Oct.'26	
	Total (K-8th Gr.)		L 4th Grade		L 4th Grade	
	No.	Per Ct.	No.	Per Ct.	No.	Per Ct.
Normal Age	17975	54.61	1202	50.38	202	51.66
Over Age	12227	37.15	992	41.57	148	37.85
Under Age	2708	8.23	192	8.05	41	10.49
Total	32910	100.00	2386	100.00	391	100.00

¹ Figures from age-grade table included in annual report of Educational Research Department—1930-31.

The difference between the percentages of pupils at normal age for their respective grades in the total Washington school population and the Enquiry Group is almost exactly accounted for by the difference between the percentages of under-age pupils for their grades in the same groups. Compared with the total low fourth grade population, the Enquiry Group has a slightly larger percentage of children at normal age for their grade, a smaller percentage who are over-age, and a larger percentage who are under-age. This may indicate that there is a little less retardation in the sample than in the general run of the low fourth grade in the city at large.

In the city wide survey made with the Stanford Achievement Test in Pittsburgh in January 1928, the figures for the low fourth grade reveal a group of pupils of like range of achievement and age in comparison with the Washington pupils. The 4497 low fourth grade pupils mentioned in that report vary in achievement from a performance equivalent to low third grade ability to that equivalent to the ability of the low eighth grade with a median grade equivalent on the Stanford Achievement Test equal to grade 4.5, and a median educational age equal to ten years and six months.¹

In comparison with the results from these two cities, this group seems to be a fair sample of the fourth grade population of the public schools of a city school system. Table 11 shows the chronological age, mental age, and educational age of these pupils compared with the average ages of low fourth grade pupils on whom the tests were standardized. They are chronologically a few months younger and mentally and educationally a little older than the usual pupil in the low fourth grade.

These then, are the data upon which this investigation is based: two groups of pupils, one in the intermediate grades; one in the junior high school. They were both, on the average, a little younger for their grade status than the accepted age norm; they were also somewhat advanced in educational and mental age, in comparison with the educa-

¹ Bulletin, Department Curriculum Study and Educational Research v. 3, No. 2, Nov.-Dec., 1928. p. 61.

TABLE 11
 MEAN CHRONOLOGICAL AGE, MENTAL AGE AND EDUCATIONAL AGE COMPARED WITH STANDARD AGE NORMS FOR A GIVEN SCHOOL GRADE STATUS.
 WASHINGTON—OCTOBER 1926
 391 CASES

School Grade Status	Chronological Age		Mental Age		Educational Age	
	Stanford Norm	Wash. Mean	N.I.T. Norm	Wash. Mean	Stanford Norm	Wash. Mean
L 4	10:0	9:7	9:8	10:2	10:0	10:6

tional and mental age norms for their respective grades. Each group on the basis of chronological age, would seem to be accelerated in school, but as a matter of fact, in relation to the mean mental and educational age, each group was slightly retarded. Will this misplacement even itself out during their school careers? Or will the difference between the school's appraisal of their ability and achievement and the objective measures of their educational development become greater?

Only by studying the continuing records of these pupils over a period of years can it be determined whether school progress is based on any sure evaluation of what has been called "the active, interest-bearing mental capital" of the school population. The amount of such capital cannot be estimated from annual tabulations of the records of a whole school system. It is commonly accepted that most of the unevenness occasioned by individual maladjustment is ironed out in such mass arrangements. Whether this disparateness persists or whether the differences between the school estimate of pupil performance and measures of the same performance expressed in terms of unequivocal meaning become less in the course of education, can only be determined by a continuing history of what a pupil has become and attained in the process of "going through school."

CHAPTER III

PUPIL PROGRESS

The Ninth Year Book of the Department of Superintendence of the National Education Association presents the second report of the Commission on the Articulation of the Units of American Education. Recognizing that "certain crucial problems of inarticulation extend through whole school systems"¹ the Commission appointed five subcommittees to study those problems which run vertically through our educational institutions. To one subcommittee was given the task of attacking pupil promotion problems. This committee approached its subject from four different angles:

1. Principles underlying promotion.
2. Promotion practices at different levels revealed by a careful survey of individual pupil case histories at those points.
3. Administrative opinion of promotion problems.
4. Provisions for improving promotion methods.

The report represents a tremendous amount of work done by the persons responsible for it, and is valuable because it has assembled and set down the opinions of teachers, principals and superintendents on this important issue. That these opinions do not agree is not surprising, nor is it any wonder that the principles of promotion laid down are overlapping and mutually inclusive. The report calls attention to the fact that promotion cannot be administered on the basis of any one principle exclusively, but that the six fundamentals of school progress must be taken as a whole.

If "the smooth, continuous, natural progress of every pupil"² through school is the goal for which the school is striv-

¹ Ninth Year Book, Department of Superintendence, p. 5.

² Ibid, p. 17.

ing, then any consideration of promotion practices should start from a consideration of pupil rights in the matter of education. Ayres (2), Breed (56), Mort (32), Strayer (42), and others agree that every school child has the right to the maximum amount of training on his own level which the school can give during the period of compulsory education. No pupil can get that maximum amount of training which is his right if he is not allowed to progress through the system as he proves his readiness for advancement.

What constitutes "readiness for promotion" and how it can be determined are moot questions. For the purposes of this investigation, however, the assumption is made that a school "grade" should signify a certain amount of curriculum materials organized as to difficulty; therefore, a child is considered to be properly graded if he has successfully mastered the grade below and is capable of doing the work of the grade he is attending. His readiness, therefore, for any grade is limited by his previous achievement and his capacity. Achievement indicates the quality and quantity of school work done; it may be measured in part by standardized tests such as the Stanford Achievement Test; it is usually signified by school marks given at stated intervals throughout the academic year. Ability refers to latent mental capacity, which can best be determined by means of an intelligence test. It is admitted that there are social adjustments, personality adaptations, differences in disposition, physical maturity and other factors of this sort which should be taken into account in the educational process. For the purposes of instruction, however, pupils should be sorted on the basis of demonstrated knowledge and ability to learn. By this interpretation, progress through school should be identified with consistent, proven accomplishment and ability. It is essential in studying school advancement or promotion from this point of view to have a continuing and accurate picture of a pupil's educational development. Cumulative histories of the same pupils over a period of years are necessary if anything is to be known of an individual's growth and if it is desired to follow the trend of his progress.

Both Pittsburgh and Washington use the system of semi-annual promotions; the second semester begins February 1st in each city, and each grade, therefore, has two divisions, a high and a low, based on a division of the work of the grade and not on the ability of the pupils in the grade.

The by-laws and regulations of the Board of Education of the District of Columbia lay down the following rules regarding promotion:¹

- "1. Regular promotions shall be made at the close of each school term; other promotions shall be special.
- "2. Promotions in the elementary schools shall be made by the principal on recommendation of the teacher, subject to the approval of the administrative officer in charge."

In the elementary school, the general practice is to advance a pupil from one grade to the next if he has "satisfactorily completed the work of the preceding grade". The criterion for such passing is in most cases the judgment of the teacher, expressed in the subjective marks recorded six times a year, or three times a semester for each pupil.

In Pittsburgh, the promotion policy varies to some extent from school to school. In the grades under consideration, the seventh, eighth and ninth, promotion is still a "grade" promotion, but there are certain exceptions to be noted. In some cases, in order to advance from one grade to the next, the primary consideration is whether a pupil has passed English. In other cases, if a pupil has passed three "solid" subjects he is promoted, unless the failed subjects include arithmetic or English. Here, too, the final decision on passing, failing or acceleration is the semester mark, recorded at the end of each semester.

Since the data from these two cities do not represent the same age or grade groups, the material will be presented separately.

¹ Board of Education of the District of Columbia, By-Laws, Rules, Regulations and Selected Statutes for the Public Schools of the District of Columbia, Revised to Sept. 30, 1926, Chap. XIII, sect. 16, p. 50.

I. Pittsburgh

A. Promotion Status Of Enquiry Group.

Promotion statistics in public school administration are usually based on the number of pupils who progress each semester or promotion period. This includes those pupils who are accelerated as well as those who make the regular advance. This is a logical procedure, yet it tends to conceal facts which merit attention in a study of promotion. The percentages of promotion for pupils in the Pittsburgh System are consistently high, as seen from Table 12.

TABLE 12
RETARDATIONS, ACCELERATIONS AND REGULAR PROMOTIONS FOR EACH OF SIX PROMOTION PERIODS.
PITTSBURGH
474 CASES

Promotion Periods	Retarded $\frac{1}{2}$ Grade or more	At grade	Accelerated $\frac{1}{2}$ grade or more	Per cent of Promotion
Feb. 1929 (H 7)	14	452	8	97.05
June 1929 (L 8)	10	445	19	97.89
Feb. 1930 (H 8)	12	456	6	97.47
June 1930 (L 9)	9	463	2	98.10
Feb. 1931 (H 9)	16	457	1	96.62
June 1931 (L 10)	9	465	0	98.10
Total Individuals (Net)	54	388	32	88.61

Note: "At grade" signifies the grade a pupil would have reached had he been promoted regularly $\frac{1}{2}$ grade per semester from the first promotion period. In Pittsburgh the normal grades for each period are indicated in parenthesis.

A high promotion rate is often presented as evidence of the efficiency of a school system. Certainly in the mind of the layman, the announcement that more than ninety-five per cent of the pupils of a school are promoted each semester is an indication that a school is fulfilling its duty to society and a pupil is successful in his educational adventure. But a so-called "high" promotion average is the easiest thing for a school official to obtain for his school. Because of this, simple promotion facts often have little significance in judging the product of a school system.

At any one promotion period included in the three years of this study, the per cent of promotion does not fall lower than ninety-six per cent. For the whole three year period only fifty-four pupils, 11.39 per cent of the whole section were at any time retarded; thirty-two, or 6.75 per cent were ever accelerated and three hundred and eighty-eight, or 81.86 per cent of the group progressed regularly, completing three grades in three years. Obviously the chances are high that a pupil in this group will advance steadily at the prescribed rate. The grade status at the end of the third year for those pupils not making the regular progress is shown in Table 13.

TABLE 13
FINAL GRADE STATUS OF PUPILS ACCELERATED OR
RETARDED FROM JANUARY 1928-JUNE 1931.
PITTSBURGH

Prom. Periods	Retarded	Acceler- ated	Grade Status—June 1931				
			8.9	9.4	9.9*	10.4	10.9
Feb. 1929	14	8	4	9	1 2	5	1
June 1929	8	17		8	3	13	1
Feb. 1930	9	6		8	1 2	4	
June 1930	5			5			
Feb. 1931	14	1		14		1	
Totals	50§	32	4	44	2 7	23	2
Summary			8.9	9.4	9.9*	10.4	10.9
Total Retarded—No.	50		4	44	2		
Percent	10.55		8.00	88.00	4.00		
Total Promoted—No.	392				392		
Regularly. Percent	82.70						
Total Acceler- ated	—No. 32				7	23	2
Percent	6.75				21.88	71.87	6.25

* Normal Grade Location for this period.

§ This total differs from the total in Table 16, because the last promotion period, June 1931, is not included here.

From this table can be ascertained the probable chances an individual has of making up his loss, if he once falls behind his group, as well as his chances of maintaining his

ground; similarly the chances that a pupil, who has once moved ahead of the group, may gain further advantage or lose what he has gained, can also be determined. It must be recognized that the numbers on which these percentages are based are small; if based on an ordinary group of pupils selected at one time, the reliability would be low. However, since these percentages are based on the records of the same pupils over a period of three years, they do indicate definite and significant trends. Of 474 pupils who were regularly promoted to the high sixth grade in February 1928 and to the low seventh in June 1928, 50 or 10.55 per cent failed of promotion during the next three years, and 32 or 6.75 per cent had been accelerated.

It is commonly accepted that the greatest amount of retardation after the first grade occurs during the fourth, fifth and sixth grades.¹ Thorndike (108) found that the fifth grade acts as a selective agent for failing pupils who are of legal age for leaving school, and the seventh grade acts as such a selector for those who remain after the fifth grade. Cornman (7) reports a progressive increase in retardation until the fifth grade, then a gradual decrease in the sixth and seventh and a marked decrease in the eighth grade. He accounts for this by the elimination from school which begins to take place as early as the seventh grade, rather than attributing it to the fact that the earlier grades are more difficult than the later. Keyes (27) also reports that certain ages and certain grades are especially favorable to acceleration and retardation. Grades three, four and five seem to offer equal opportunities for both; acceleration for the child eight, nine or ten years old and retardation for the pupil fifteen, sixteen or seventeen years old.

Whatever the implications of such a high rate of regularity of promotion may be, in so far as these pupils are concerned, the chances seem to be about nine in ten that a member of this group will progress regularly through the last years of the elementary school. On the other hand, slight as it is, the tendency seems to be that a pupil has more chance of being retarded than being accelerated; and

¹ Ninth Year Book, Department of Superintendence, p. 53.

that once failed, there is almost no chance, as few as four in one hundred, of making up his loss. To be accelerated, however, is no criterion of continued progress. Of the thirty-two pupils advanced, seven or approximately twenty-two per cent lose the gain they have made.

The situation seems to be therefore, that these pupils are satisfactorily discharging their school obligations. On the face of it, this record indicates little retardation and almost no acceleration; as a group these pupils seem to meet the curricular requirements of each grade and are regularly promoted at the end of each semester.

B. Educational and Mental Measurements.

While these figures are illuminating they give no information about the quality of the work of these pupils, either as appraised by the school or measured by standard tests. The ranges, means and standard deviations of all the mental and educational measurements for these pupils for the period following their first promotion are shown in Table 14.

Again attention must be called to the numbers of pupils accelerated and retarded. The fact that ninety-seven per cent of the entire group was promoted at this period, tends to make the reliability of the means of these deviates questionable. None-the-less, there is to be noted a steady small increase in mean score from that of those pupils not promoted to the average of those who were accelerated. This would seem to indicate that the school appraisal of the achievement of these pupils was fairly accurate. On the average this may be true.

But the extent of over-lapping shown in Chart 2 is the really significant thing about these figures. The scores on all educational and mental measurements have been transmuted into standard scores¹ by use of the formula

$$\frac{M-X}{\sigma}=Z$$

¹ For a discussion of standard scores, see Kelley, T. L., *Statistical Method*, pp. 114-117.

TABLE 14

RANGES, MEANS AND STANDARD DEVIATIONS OF CHRONOLOGICAL, EDUCATIONAL AND MENTAL AGES, GRADE LOCATION, STANFORD ACHIEVEMENT GRADE EQUIVALENTS, I. Q.s, AND COMPOSITE SCHOOL MARKS OF PUPILS RETARDED, REGULARLY PROMOTED AND ACCELERATED.

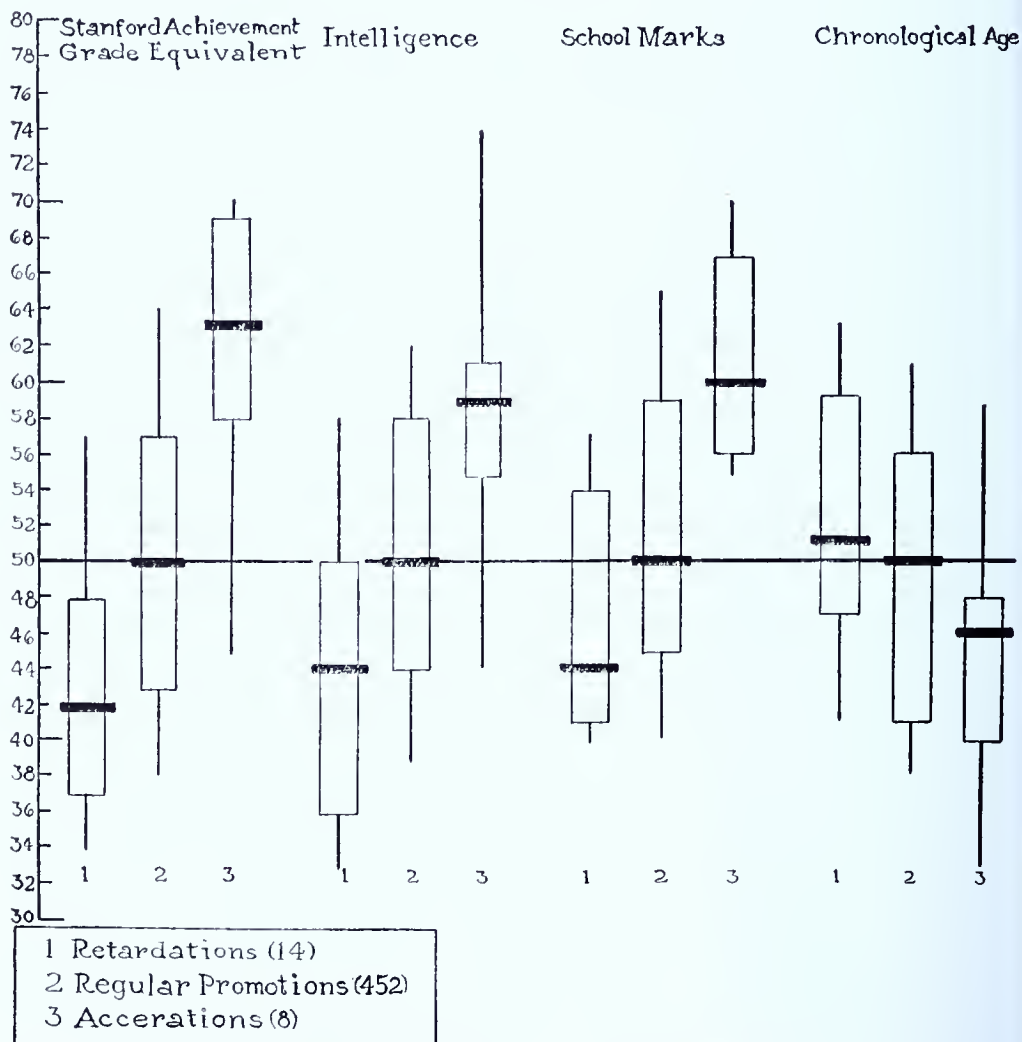
PITTSBURGH—FEBRUARY 1929

474 CASES

Measure	Retarded—14			Regularly Promoted—452			Accelerated—8			Total Group—474		
	Range	M.	S.D.	Range	M.	S.D.	Range	M.	S.D.	Range	M.	S.D.
Grade Status		7.3			7.8	0.11		8.3		7.3-8.3	7.8	0.11
Stanford Gr. Equivalent	5.5-9.4	7.1	1.01	5.0-10.4	8.05	1.16	7.0-10.4	9.5	0.99	5.0-10.4	8.0	1.18
I. Q.	20-129	98.1	11.66	70-139	105.8	12.29	90-139	117.0	12.0	70-139	105.8	12.43
Chron. Age	11:3-15:2	13:2	9.84	10:3-19:2	13:1	10.08	11:3-14:2	12:9	9.0	10:3-19:2	13:1	10.11
Mental Age	10:0-16:11	12:7	9.26	9:6-18:5	13:10	20.52	12:0-17:5	15:6	19.02	19:6-18:5	13:10	20.77
Educational Age	11:3-15:2	12:9	12.12	10:9-18:8	13:11	15.54	12:9-17:3	15:8	14.76	10:9-18:8	14:1	15.87
Marks	3-9	6.1	1.63	0-12	7.3	2.16	8-11	9.4	1.22	0-12	7.3	2.14

CHART 2

Means, Quartiles, Tenth and Ninetieth Percentiles of Mental and Educational Measurements for Retardations, Regular Promotions and Accelerations
Pittsburgh May 1929
474 Cases



Note: Promotions were of February 1929; tests were given May 1929.

Where M equals the group Mean of the measure in question, X equals the individual score and σ equals the standard deviation of the distribution¹.

Of those pupils who were not promoted, half of them equal the performance of the lower quartile of those promoted, on the basis of achievement, intelligence and school marks. Similarly, the eight pupils who were accelerated show an unusually wide variation, some of them scoring, according to the Stanford and Otis Tests considerably below the mean of the group who were promoted.

In mass measures these individual differences are often overlooked. Yet no study of promotion, or of school progress based on real attainment can lose sight of the individual pupil. The educational structure, as well as the social structure, is built of individuals; it cannot exist without them. What of these pupils retarded, who equal the performance of pupils who were accelerated? Aside from any attitudes or complexes for which the foundation may be laid by such unequal treatment, what could have been the standards set up within a school or grade, that would accelerate one pupil showing a certain performance, retard another of the same achievement and ability and regularly promote a third no better and no worse than either of the others?

Granted that mistakes in judgment can be made in appraising pupil performance are these mistakes corrected or evened out the longer pupils remain in school?

Do three years' attendance in school, with the better knowledge of individual differences which time is supposed to bring, make any considerable change in the school appraisal of these pupils. Table 15 presents the summary of educational and mental measurements for the spring of 1931, compared with the school estimate of progress and achievement expressed in terms of grade status and marks. By January 1931, forty-eight pupils have had some retardation which they have not made up, and twenty-five have been granted acceleration which they have not lost. This leaves a total of four hundred and one pupils who

¹ This procedure has been followed for all similar charts hereafter.

TABLE 15

RANGES, MEANS AND STANDARD DEVIATIONS OF CHRONOLOGICAL, EDUCATIONAL AND MENTAL AGES, GRADE LOCATION, STANFORD ACHIEVEMENT GRADE EQUIVALENTS, I. Q.'s, AND COMPOSITE SCHOOL MARKS OF PUPILS RETARDED, REGULARLY PROMOTED AND ACCELERATED.

PITTSBURGH—JANUARY 1928—JANUARY 1931.

474 CASES

Measure	Retarded—48			Regularly Promoted—401			Accelerated—25			Total Group—474		
	Range	M.	S.D.	Range	M.	S.D.	Range	M.	S.D.	Range	M.	S.D.
Grade Status	8.5-9.0	9.0	0.04		9.5		10.0-10.5	10.0	0.002	8.5-9.0	9.5	0.22
Stanford Gr. Equivalent	6.0-10+	8.2	1.18	6.0-10+	9.0	1.10	6.0-10+	9.6	0.94	6.0-10+	9.0	1.13
I. Q.	70-119	97.1	9.22	70-139	104.5	10.82	70-139	110.1	11.36	70-139	104.1	10.97
Chron. Age	13:3-17:9	15:5	9.24	12:3-17:3	15:0	10.14	13:3-16:3	14:11	8.64	12:3-17:9	15:0	9.66
Mental Age	10:6-16:11	13:10	18.48	10:6-18:5	15:0	18.36	11:0-18:5	15:9	18.12	10:6-18:5	14:11	19.05
Educational Age	11:9-16:8	14:2	15.0	11:9-18:8	15:0	15.9	13:9-18:8	15:10	16.3	11:9-18:8	15:0	16.28
Marks	0-8	4.19	2.40	0-12	6.21	2.82	3-12	7.76	2.53	0-12	6.2	2.64

are classified as "regularly promoted," because, either by normal progress each semester, or by a balancing of arrest and extra promotion, they have arrived at the beginning of the high ninth grade. There is the same small increase in the means of the test scores, and school marks, as well as a corresponding decrease in chronological age for each of these groups similar to that noted at the end of the first semester. Although the school places a higher estimate on the quality of the work of those pupils accelerated than on that of the pupils who fail, it is to be noted that some pupils have been regularly promoted who in their last semester failed every subject they were taking; likewise some pupils have been accelerated who were reported by the school to be doing "D" work. At the end of the ninth grade, after five promotion periods, the amount of over-lapping is still as great, if not greater, than at the end of the first promotion period.

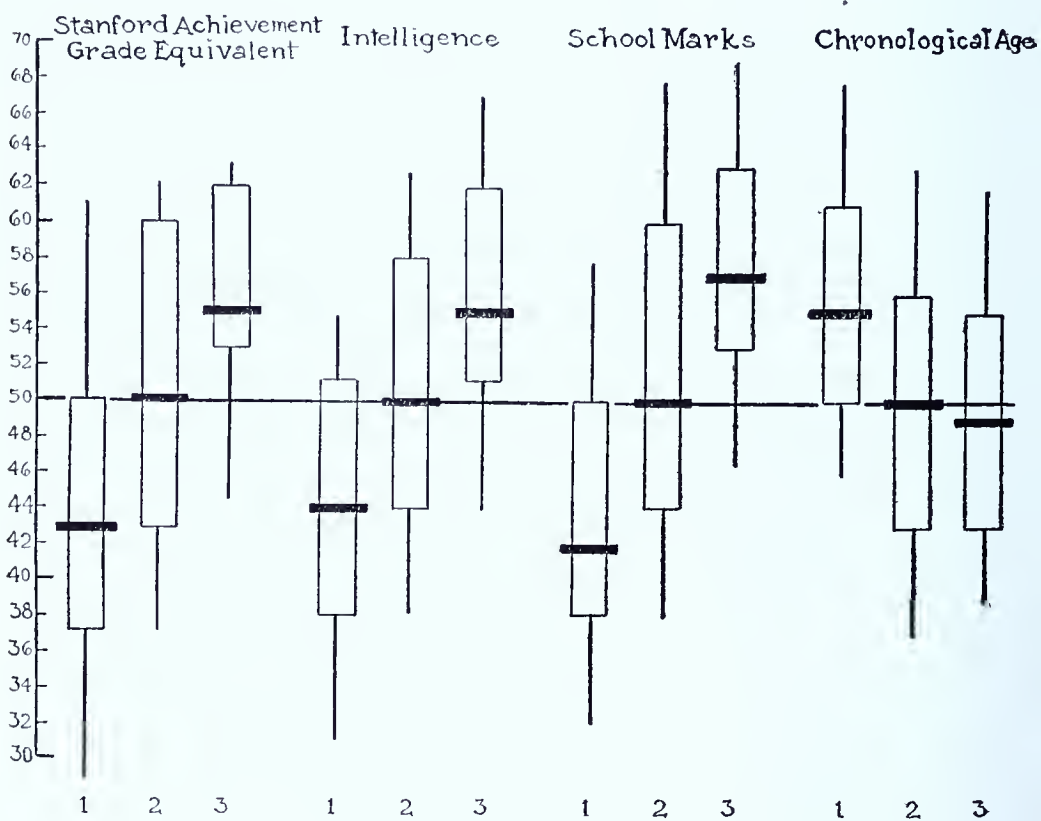
Chart 3 shows pupils who have been retarded whose tested achievement equals the performance of the upper quartile of those accelerated, who are above the mean of the accelerated in intelligence, whom the school has marked as high as B—and who are younger than the average specially promoted pupil.

The writer is well aware that extreme caution¹ should be exercised in placing too much reliance in total achievement scores as a basis for promotion. Many other factors, which cannot be considered in their proper relationships here, play a large part in pupil advancement. Some pupils are promoted because of unusually high standing in arithmetic or reading; on the other hand, some are undoubtedly denied deserved promotion because of low achievement in a single subject. In addition, absence, deportment and social adjustments tend to color the situation at promotion time, so that a long view of the best interests and needs of the individual is almost impossible to attain. However, with a test of as high reliability as the Stanford Achievement Test, any conclusions drawn from such data as these here presented should be more valid than the same conclusions based on school marks.

¹ See Kelley, T. L., *Interpretation of Educational Measurement*, p. 79.

CHART 3

Means, Quartiles, Tenth and Ninetieth Percentiles of Mental and Educational Measurements of Total Retardations, Regular Promotions and Accelerations
Pittsburgh - January 1928-January 1931
474 Cases



1=Retardates (48)
2=Regular Promotions (401)
3=Accelerations (25)

Furthermore, from the data shown in Table 16, it will be noted that wherever there is a difference between the school grade status and measured achievement, it is in favor of the grade location. If the fact that the variability of the group on the basis of grade placement is very small had not been shown by the percentage of regularity of promotion, it would have been indicated by the size of the standard deviation of the grade location distribution.

In February, 1929, two thirds of these pupils are to be found either in the high seventh or the low eighth grade in their respective schools; in February, 1931, two thirds of them are either in the low ninth or high ninth grade. On the basis of these figures this would seem to be a very homogeneous group. That it is not so homogeneous as this school grade variability would seem to indicate, is obvious from the amount of spread of the achievement test scores of these same pupils.

In February, 1929, on the basis of the Stanford Achievement Test composite scores, two thirds of these pupils attained a grade equivalent between the high sixth grade and the low ninth; three years later the grade equivalents of two thirds of this group range between the high seventh and the low tenth grade. In other words, pupils whose achievement shows a variability of five half-grades are classified by the school within the limits of two half-grades. According to these data these pupils are on the average graded too high. This is contrary to the usually accepted idea that more pupils are graded too low than too high.

Perhaps the first reaction most teachers show to such information as this, is to question the reliability of the tests. They say that the pupils who test high one time do not always test high the next time; they argue that too much confidence cannot be placed in such examinations because they are not consistent. Further, they say, the differences between the mean school grade status and the mean Stanford equivalent are neither significant nor reliable.

It may be said that the differences between the measures are so small that they are not significant. However, it is possible to determine whether these differences indicate real

disparity or are due to chance. If the quotient of the difference divided by the standard error¹ of the difference is three or more, then it is practically certain that there is a real difference between the two traits in question.² Is this disparateness in favor of grade location due simply to chance errors in sampling, or to other unreliabilities of the test? From the size of the figures in the last column of Table 16 it would seem not to be due to the latter.

TABLE 16
MEAN DIFFERENCES FOR STANFORD ACHIEVEMENT
GRADE EQUIVALENTS AND SCHOOL
GRADE LOCATIONS.
PITTSBURGH—JANUARY 1928—JANUARY 1931
474 CASES

Dates	Stan. Ach. Gr. Eq.(1)			Sch. Gr. Status(2)			r ₁₂	D		$\frac{D}{\sigma_{diff}}$
	M ₁	σM_1	S.D.	M ₂	σM_2	S.D		M ₂ -M ₁	σ_{diff}	
1-28	6.5	.05	.91	6.5				.0		
5-29	8.0	.05	1.18	8.0	.007	.16	.22	.0	.053	0
1-30	8.4	.058	1.27	8.5	.008	.18	.26	.1	.032	3
1-31	9.0	.051	1.13	9.5	.01	.22	.24	.5	.049	10

In January 1928 and May 1929, the difference is zero; in other words, the mean grade achievement of these pupils is equal to the mean grade location. While a grade placement, if perfect, should equal the grade performance, it so rarely happens that it is all the more significant.

In January 1930, the grade location is 0.1 of a grade higher than grade performance. Negligible, it will be said. However, a $\frac{D}{\sigma_{diff}}$ of three indicates that, though small, this is a thoroughly reliable difference. By the next year the difference has become larger and very much more reliable.

Further, if the records of the same pupils are followed over a period of years, it appears that the test results of given individuals are consistent, those pupils testing high on the

¹ The formula for the standard error of a difference used here is:

$$\sigma_{diff} = \sqrt{\sigma^2 m_1 + \sigma^2 m_2 - 2r_{12}\sigma m_1 \sigma m_2}$$

See Kelley, T. L., *Statistical Method*, pp. 181-5.

² Garrett, H. E., *Statistics in Psychology and Education*, pp 183.

initial test, tending to test high on the final test; similarly those pupils who tested low on the initial test, did not make high scores on the final test. Table 17 shows the initial and final status of pupils in the various class intervals on this Test. It will be noted that whereas there are thirteen half-grade intervals in January 1928, there are only nine half-

TABLE 17
INITIAL AND FINAL STANFORD ACHIEVEMENT GRADE
EQUIVALENT AND SCHOOL GRADE STATUS.
PITTSBURGH
474 CASES

	School Grade Status															
Stan. Ach. Gr. Equiv.	4		5		6		7		8		9		10		Total	
	L	H	L	H	L	H	L	H	L	H	L	H	L	H		
L					1											
4 H					7											
L					40											
5 H					86											
L					<u>118</u>				3	7	1				11	
6 H					72				1	2	12				15	
L					87				3	24					27	
7 H					29				1	7	39				47	
L					21				4	53	2				59	
8 H					8				<u>4</u>	<u>45</u>	1				50	
L					2				3	<u>60</u>	4				67	
9 H					2					50	<u>6</u>				56	
L					1				6	122	12	2			142	
10+																
Total					474				2	32	412	26	2		474	
January 1928								January 1931								

At Grade	276	58.23%	At Grade	190	40.08%
Graded too low	150	31.64%	Graded too low	128	27.01%
Graded too high	48	10.13%	Graded too high	156	32.91%

grade intervals in January 1931. This is due to the fact that although the Stanford Achievement Test is designed for use through the eighth grade, there are many of the pupils in this group at the upper end of the scale whose educational achievement is unmeasured by this examination. Some of them on every test since May 1929 have secured a composite score higher than that which is the equivalent of tenth grade achievement. While their numerical scores show consistent increase, their grade performance is recorded simply as 10+.

A study of this table reveals the fact that whereas in January 1928 more pupils were graded too low than too high, in January 1931, three years later, there were more graded too high in comparison with their Stanford performance than there were those who were graded too low! This is again contrary to the usually accepted theory that more pupils are classified too low than too high. Following the records of certain groups of pupils it is seen from Table 18 that of the two hundred and seventy-six pupils whose achievement was within a half-grade of their school status in January 1928, only one hundred thirty-eight or exactly fifty per cent, were so classified in school in 1931; of the remaining fifty per cent, twenty-six or approximately nine per cent of the original number were graded too low; the others, one hundred twelve, were placed from one to three grades above their average performance. A glance at the original position of these pupils in Table 17 will show that instead of losing ground as measured by their test scores, they have increased their store of acquired knowledge. Although eighty-six individuals achieved a level normal for the high fifth grade in 1928, in 1931, from Table 18 it is seen that only two scored as low as the average performance of low sixth grade pupils.

A like analysis of all the records reveals the same tendency: pupils scoring low on the initial test in general score low on the final test; likewise, pupils scoring high on the initial test show the same trend of performance three years later. However, the differences between achievement and status are greater at the end than at the beginning.

TABLE 18
FINAL STANFORD ACHIEVEMENT GRADE EQUIVALENT
AND SCHOOL GRADE STATUS OF PUPILS WITH
INITIAL STANFORD ACHIEVEMENT GRADE
EQUIVALENT WITHIN ONE HALF
GRADE OF SCHOOL GRADE
STATUS
PITTSBURGH

Stan. Ach. Gr. Equiv.	School Grade Status										Total
	6		7		8		9		10		
	L	H	L	H	L	H	L	H	L	H	
6 L							2				2
6 H						1	8				9
7 L						1	14				15
7 H						7	30				37
8 L						3	46	2			51
8 H						2	40	1			43
9 L						3	46	3			52
9 H							33	5			38
10+ L						2	24	3			29
10+ H											
Total						19	243	14			276

On the evidence presented by these data it would seem safe to conclude that pupil advancement, made on the basis of subjective estimates of pupil knowledge, is, for a considerable number of cases, not justified by objective measures. If the promotion policy of this system is based on the quality concept of a school grade, then the school appraisal of the worth of the educational product of these pupils is considerably lower than its true excellence. If, however, the age concept is the underlying theory of promotion, the following sections will show whether the facts will support it.

C. Chronological, Educational and Mental Over-ageness and Under-ageness in Relation to Promotion.

Age-grade indices have long been used as one indication of the way in which a school system is meeting its obligation of giving every pupil maximum training consistent with his ability. School surveys, superintendent's reports, educational investigations of every sort have presented and discussed the percentage of over-age, under-age and normal age pupils for their respective grades. One¹ of the most recent school surveys contains the following statement:

"The obligation of a school system is to get pupils to enter school at the optimum age and so to regulate their progress that year by year they come in contact with educational offerings adapted to their abilities and needs. In a school system which meets this obligation, that is, effectively administers its educational opportunities, pupils in the several grades approximate normal age for their respective grades. Thus the extent to which pupils in a school system are too young or under-age for their grades, too old or over-age for their grades, and normal age for their grades is an important although rough measure of the extent to which the boys and girls of a given school system really enjoy appropriate educational opportunities."

A little further on this statement appears:

"If this is done,² pupils will progress normally from grade to grade year by year. Hence a further important measure of the efficiency of the administration of educational opportunities is the extent to which pupils make normal progress."

This would seem to support Van Wagenen's (47) statement that chronological age is still the basic factor in promotion. There are those who believe it should be. The social adaptations necessary for ten and eleven year old pupils in a grade the normal age limits of which are fifteen to six-

¹ Report of the Survey of the Public Schools of Nashville, Tenn., 1931. pp. 33, 37.

² "this" refers to the previously mentioned "obligation of a school system."

teen are said to be difficult to make; they are probably more difficult for the fifteen year old than for the ten year old. On the other hand, the traditional sequence of subject matter from one grade to another has set up a criterion of satisfactory achievement of a certain amount of the material of a grade, in order to pass from one grade to the next. This necessitates some just and clear appraisal of what constitutes satisfactory achievement. Chronological age grade indices are inadequate as a basis for determining the intellectual and academic inequalities among pupils of the same age group. Nor is a high percentage of promotion or regularity of progress through school sufficient. A non-promoted pupil is not necessarily educationally retarded; similarly a promoted pupil may be educationally retarded by his promotion if he is not well prepared for the work of the next grade. Nor is retardation always a distinguishing characteristic of the dull child; it is often the misfortune of the able.

Chart 4 shows that the accepted idea that the young pupil is usually the bright pupil holds true for this group. The twenty-two pupils finishing the seventh grade before they are twelve years old have an average I. Q. on the Otis Test of about one hundred and nineteen. From this level the average I. Q. runs as low as eighty-five for those older pupils in the group.

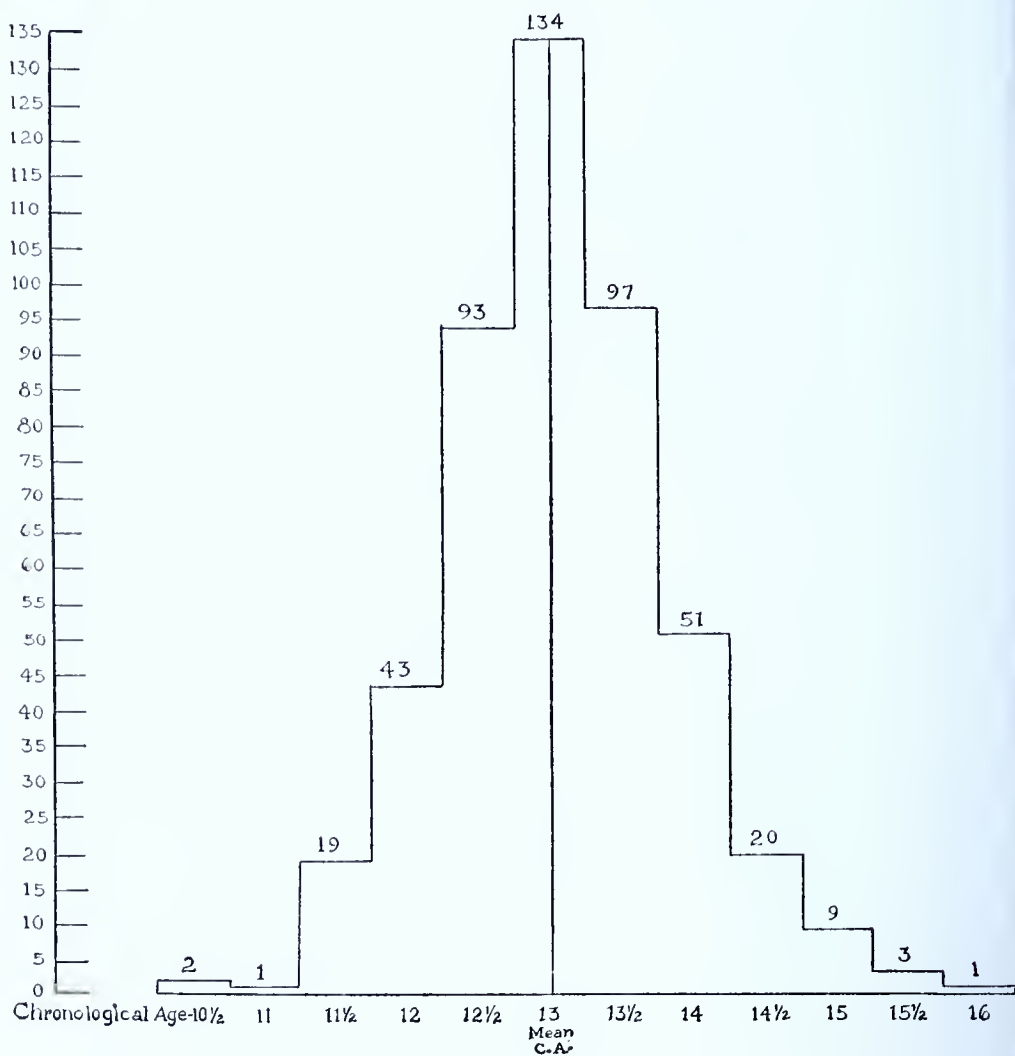
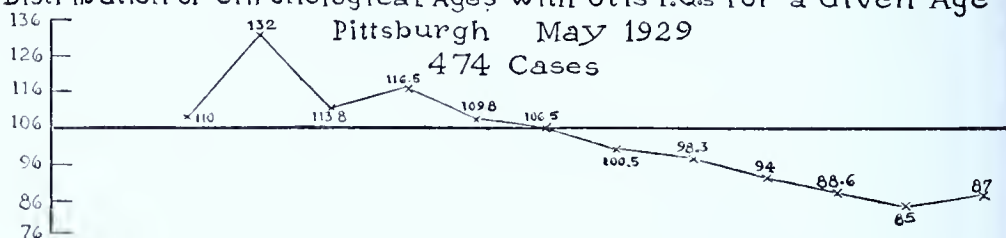
Terman (43) presents a great deal of evidence from many studies to show that the over-age child is usually the dull child. Table 19 gives the average I. Q. of the over-age and under-age pupils in this group. An I. Q. of ninety-eight

TABLE 19
MEAN INTELLIGENCE QUOTIENT OF PUPILS CHRONOLOGICALLY OVER-AGE AND UNDER-AGE
PITTSBURGH

	May 1929	May 1931
Over-age	98.2	98.8
Under-age	116.5	113.0

CHART 4

Distribution of Chronological Ages with Otis I.Q.'s for a Given Age
 Pittsburgh May 1929
 474 Cases



does not indicate a dull child, but in comparison with an I. Q. of one hundred and thirteen or one hundred and sixteen it does signify a less able child.

The percentages of chronological over-ageness and under-ageness for this group at the beginning of this study did not vary to any great extent from the percentages for the city of Pittsburgh or for the State of Pennsylvania. With the emphasis that is placed on such percentages by school administrators, the desirable outcome would seem to be that the longer pupils remain in school, the larger should the percentage of children "at grade for their age" become, and correspondingly, the number of over-age and under-age would decrease. Certainly this would hold true if a grade really represents a certain level of maturity.

TABLE 20
NUMBERS AND PERCENTAGES OF PUPILS CHRONOLOGICALLY AT AGE, OVER-AGE AND UNDER-AGE
FOR THEIR RESPECTIVE GRADES.
PITTSBURGH
474 CASES

Dates	Under-Age		At Age		Over-Age	
	No.	Per cent	No.	Per cent	No.	Per cent
January 1928	40	8.44	326	68.78	108	22.78
January 1929	39	8.23	311	85.61	124	26.16
January 1930	39	8.22	316	66.67	119	25.11
January 1931	39	8.23	309	65.19	126	26.58

The factor immediately evident from Table 20 is the consistency of the percentages of over-age, under-age and at-age pupils. When this fact is considered in relation to the percentage of regular promotion shown in Table 12, the inference is logical that the fundamental philosophy of promotion in this system is that of progress by age groups. After one semester in a grade, the group, with few exceptions, progresses to the next class, and having all entered school at the same age level, prescribed by statute, they advance regularly one grade a year. While it is difficult to convince the general public that the school has not failed in its duty if it takes a child longer than eight years to complete the ordinary elementary school, most writers on this subject agree

that although age-grade indices are easy to calculate, they are inadequate measures of the progress of children.

The real retardation within a group, however, is to be found in the amount of educational and mental retardation concealed therein. Terman¹ says:

“In the case of a physical trait such as height, perhaps few would deny that the differences found represent in the main differences in original endowment. That the progress children make through the grades of a school system is also chiefly dependent upon original endowment is neither so obvious nor so generally believed. . . . The real retardates are the under-age children who are generally found from one to three grades below the location which their mental development would warrant.”

It is mental and educational over-ageness or under-ageness, therefore, that will yield the information regarding the real retardation or acceleration of these pupils.

No measure of intelligence was available for this group at this initial period, but the amount of educational retardation revealed in Table 21 shows that at the beginning of the study there were approximately as many pupils educationally over-age for their respective grades as there were those who were under-age. Compared with the amount of chronological over-ageness it is observed that whereas for every child in this group too young for the low sixth grade, there are about three too old for it, yet for every pupil not sufficiently prepared for this grade on the basis of objective measurement, there is one who is fitted for a higher location. This is true over-ageness and should be the measure of the efficiency of a school system, rather than the number of pupils outside of the chronological age limits.

Table 21 also shows the progressive change in the educational age of these pupils in relation to their grade position. It will be noted that the amount of educational under-ageness is increasing and correspondingly the number of pupils educationally over-age for their grade location is decreasing.

¹ Terman, Lewis M., “The Intelligence of School Children,” pp. 21-24.

TABLE 21
EDUCATIONAL AGE-GRADE TABLE¹
PITTSBURGH
474 CASES

January 1928										May 1929										January 1931													
Educational Age	5			6			7			Educational Age	6			7			8			Educational Age	7			8			9			10			Total
	L	H	L	H	L	H	L	H	L		H	L	H	L	H	L	H	L	H		L	H	L	H	L	H	L	H	L	H			
10:6					3					11:0				1					1	12:0				3	3	1				7			
11:0					30					11:6				1	8				9	12:6				1	2	22				25			
11:6					88					12:0				4	27				31	13:0					2	19				21			
12:0					130					12:6				4	52				56	13:6				1	7	27				35			
12:6					97					13:0				1	69		1		71	14:0					5	48	2			55			
13:0					63					13:6				1	70				71	14:6					4	41	1			49			
13:6					29					14:0				1	42				43	15:0					3	49	4			56			
14:0					15					14:6				1	48				49	15:6						65	3			68			
14:6					12					15:0				1	60		1		62	16:0						6	62	4		72			
15:0					3					15:6					30		1		31	16:6							43	5	1	49			
15:6					2					16:0					27		3		30	17:0							17		1	18			
16:0					1					16:6					13		1		14	17:6							10	1		11			
16:6					1					17:0					1				1	18:0							5			5			
										17:6					3		1		4	18:6							1	2		3			
Total					474					18:0					1				1	Total							2	32	415	23	2	474	
										18:6																							
										Total					14	452	8																

¹ Educational Age-Grade Equivalents from Manual of Directions, Stanford Achievement Test.

These figures were arrived at by counting any pupil within one-half grade of his real status as educationally at grade. Had the age limits of the grades been strictly adhered to, the increase and decrease of educational under and over-ageness would have been even more striking.

In January 1928, one hundred and twenty-one pupils are seen to be educationally under-age for the low sixth grade and one hundred and twenty-six were over-age. This means that there were as many pupils not ready for the grade they were attending as there were pupils who were advanced in achievement beyond the tasks allocated to their grade position. If a school system is mindful of the needs of its pupils, it will attempt to adjust to them the curriculum offerings, so that no child will be attempting work for which he is not prepared, nor will any child be required to attend to what he has already learned. Therefore, succeeding adjustment or promotion periods should remedy this situation. However, in May 1929, three semesters later, ninety-four children were under-age and two hundred and thirty-six were over-age for their respective grade positions. Of the ninety-four pupils below the educational age norm for their grade, five were retarded one-half grade and one was accelerated one-half grade. In January 1931, when the last Stanford Achievement Test was taken, one hundred and thirty-eight pupils proved themselves from one to three years educationally under-age for their grade location, and two hundred and twenty-six were over-age for their grade. Of these over-age pupils, ten had been at some time retarded, and of the under-age pupils, six had received extra promotions.

Thus we have the amount of educational under-ageness remaining fairly constant through the three years of this study and educational over-ageness approximately doubling. Year by year these pupils increase their store of acquired knowledge, yet are promoted regularly, presumably not on the basis of accomplishment; and at the other end of the scale the others struggle along year after year, dropping further and further behind in their achievement, yet also moving up regularly with the procession at each promotion period.

TABLE 22
MENTAL AGE GRADE CHART
PITTSBURGH
474 CASES

May 1929—Otis Intermediate Examination														
Mental Age	School Grade Status												Total	
	4		5		6		7		8		9			
	L	H	L	H	L	H	L	H	L	H	L	H		
9:0														3
9:8								3						3
10:4							2	7						9
10:10							1	23						24
11:5							2	32						34
12:0							2	37	1					40
12:4							3	27						30
12:10							1	59						60
13:5							1	34						35
13:10								35						35
14:2								28	1					29
14:6								17						17
14:8							2	150	6					158
Total							14	452	8					474

May 1931—Otis Higher Examination														
Mental Age	School Grade Status												Total	
	8		9		10		11		12					
	L	H	L	H	L	H	L	H	L	H				
13:0		2	14	50	2									68
13:3			2	22										24
13:7			8	20										28
14:0		1	1	34	2									38
14:4			2	11										13
14:6			7	26	1									34
14:10			1	17	1									19
15:0			1	14										15
15:2		1	1	13	2									17
15:4				22	1									23
15:6				18										18
15:8			7	154	14	2								177
Total		4	44	401	23	2								474

That they are not dull is shown clearly in Table 22. In 1929, on the basis of the Otis Intermediate Examination, one hundred and thirty-seven pupils were below the average mental age for their respective grades, and two hundred and seventy-five were above the average. In May 1931, measured by the Otis Higher Examination, one hundred and four-

teen were under-age and three hundred and eighteen were over-age. Nearly three times as many children were superior to the mental age limits of their respective grades as were below these limits. This fact, in the light of the number of pupils educationally under-age for their grade, leads to the inference that many of these individuals are not receiving the training or stimulation comparable with their ability. Such a contrast as this emphasizes the fact that the school is not taking advantage of the intelligence which is hidden and undiscovered in these pupils. The solidarity of promotion shown in the records of this group suggests that it is an attempt to fit every pupil to the same routine. But the figures showing the achievement and ability of these pupils prove that this cannot be done.

II. Washington

A. Promotion Status of Enquiry Group.

It will be obvious at once from Table 23, that there is less regularity of promotion in this group of children from the fourth, fifth and sixth grades, than was shown in the data from the seventh, eighth and ninth grades in Pittsburgh.

TABLE 23
RETARDATIONS ACCELERATIONS AND REGULAR PROMOTIONS FOR EACH OF SIX PROMOTION PERIODS.
WASHINGTON
391 CASES

Promotion Periods	Retarded ½ Grade or more	At grade	Accelerated ½ grade or more	Per cent Promoted
Feb. 1927 (H 4)	21	343	27	94.63
June 1927 (L 5)	25	298	68	93.61
Feb. 1928 (H 5)	16	361	14	95.91
June 1928 (L 6)	23	354	14	94.12
Feb. 1929 (H 6)	13	333	45	96.93
June 1929 (L 7)	11	354	26	97.19
Total Individuals (Net)	81	188	122	79.28

Note: The normal grade locations for each promotion period are indicated in parenthesis.

The most significant figures are those in the last row of this Table: "Total individuals retarded, 81; total individuals at grade, 188; total individuals accelerated, 122." Over a three year period, 81 pupils or 20.72 per cent of this group received a retardation at some time; 122 pupils, or 31.2 per cent were accelerated and 188 or 48.08 per cent progressed regularly through school one half-grade per semester. These data indicate a much greater spread or variability in the grade status of this group than in the grade location of the pupils in Pittsburgh group.

It may be that the grade differences are not so great in the upper grades as in the lower; it may not be so difficult to progress from the seventh grade to the eighth as from the

TABLE 24
FINAL GRADE STATUS OF PUPILS ACCELERATED OR
RETARDED
WASHINGTON
OCTOBER 1926—JUNE 1929

Prom Periods	Retarded ½ grade	Acceler'd ½ grade	Grade Status—June 1929							
			5.4	5.9	6.4	6.9*	7.4	7.9	8.4	8.9
Feb. 1927	21	27	1	7	10	3				
						3	8	9	6	1
June 1927	20	53		3	16	1				
						1	33	10	4	
Feb. 1928	14	7			12	1	1			
							6	1		
June 1928	13	5			8	5				
							5			
Feb. 1929	9	21			9					
							20	1		
Totals	77†	113†	1	10	55	10	1			
						4	77	21	10	1
Summary			5.4	5.9	6.4	6.9	7.4	7.9	8.4	8.9
Total Retarded—	No. 77		1.	10	55	10	1			
Per Cent	19.69		1.30	12.99	71.42	12.99	1.30			
Total Promoted—	No. 201					201				
Regularly.	Per cent 51.41									
Total Accelerated—	No. 113					4	77	21	10	1
Per Cent	28.90					3.54	68.14	18.58	8.85	0.89

* Normal grade location for period indicated.

† This table does not include the retardations and accelerations occurring in June 1929.

fourth to the fifth. It may also be that the pupils in the upper grades because of the elimination that has taken place are a more homogeneous group.

Whatever such differences may indicate in so far as these pupils are concerned, the chances seem to be about even that a child in Washington will progress regularly, as against the probable nine chances in ten of regular promotion for a pupil in Pittsburgh.

Table 24 shows the grade status at the end of the third year of these deviates from the normal school routine.

In Washington at the end of the school year, before the final promotion period, 77 different pupils or 19.69 per cent had lost step with their fellows some time during three years, and 113 or 28.9 per cent had gone ahead of the group. Of the 77, 11 had made up the ground they had lost and 4 of the 113 had lost the ground they had gained. Therefore, 66 net pupils received 98 retardations and 109 net pupils received 168 accelerations. This gives a ratio of retardation per pupil of 1.48, and a ratio of acceleration per pupil of 1.54. This would seem to indicate that if a pupil has failed once, he is apt to fail again; likewise, if he has had one extra promotion, he is more apt to get a second. Further, 11 of the 77 pupils who were not advanced made up the ground they had lost, 55 maintained their position and 11 dropped further behind the group. Thus the chances are 14 in 100 or about 1 in 10 that a pupil who has once failed will make up his loss; about 15 in 100, little more than 1 in 10 that he will lose still more ground, and about 71 in 100, or 7 in 10 that he will progress regularly after his failure. The tendency seems to be that retardation does not even itself out, but remains fairly constant.

On the other hand, the situation seems to be reversed in the case of acceleration. Of the 113 pupils who gained an extra promotion some time during the three years, 4 or 3.54 per cent lost the ground they gained; 77 or 68.14 per cent maintained their position $\frac{1}{2}$ grade in advance of their normal grade location, and 32 or 28.32 per cent gained more advancement. This would indicate that the chances of being retarded after once being accelerated are very small, not

TABLE 25

RANGES, MEANS AND STANDARD DEVIATIONS OF CHRONOLOGICAL, EDUCATIONAL AND MENTAL AGES, GRADE LOCATION, STANFORD ACHIEVEMENT GRADE EQUIVALENTS, I. Q.'s, AND COMPOSITE SCHOOL MARKS OF PUPILS RETARDED, REGULARLY PROMOTED AND ACCELERATED.

WASHINGTON—MARCH 1927

391 CASES

Measure	Retarded—21			Regularly Promoted—343			Accelerated—27			Total Group—391		
	Range	M.	S.D.	Range	M.	S.D.	Range	M.	S.D.	Range	M.	S.D.
Grade Status		4.1			4.6					4.1-5.1		
Stanford Gr. Equivalent	3.0-5.9	4.3	0.63	3.0-7.4	5.1	0.70	4.5-7.4	5.9	0.71	3.0-7.4	5.1	0.75
I. Q.	60-139	93.5	14.53	70-159	110.3	14.39	90-159	124.9	12.25	60-159	110.4	15.26
Chron. Age	8:4-13:3	10:5	11.31	7:6-13:3	9:11	10.34	7:6-12:5	9:7	8.25	7:6-13:3	9:11	10.33
Mental Age	8:3-12:5	9:7	10.25	8:3-12:9	10:10	10.58	10:6-13:9	11:11	9.38	8:3-13:9	10:10	11.66
Educational Age	8:3-12:1	10:2	9.75	9:7-12:11	10:11	8.31	10:5-12:11	11:9	8.54	8:3-12:11	11:0	9.13
Marks	4-10	5.3	1.66	5-12	8.7	1.52	9-12	10.5	0.95	3-12	8.7	1.76

quite 4 in 100; they are 68 in 100, about 6 in 10 that the progress will be maintained, and about 28 in 100, or 3 in 10 that the fortunate pupil will be advanced further. It is interesting to note that in Washington there were 1.54 times as many pupils accelerated as there were retarded; in Pittsburgh these figures are just reversed: there are 1.56 times as many pupils failed as there are accelerated.

B. Educational and Mental Measurements.

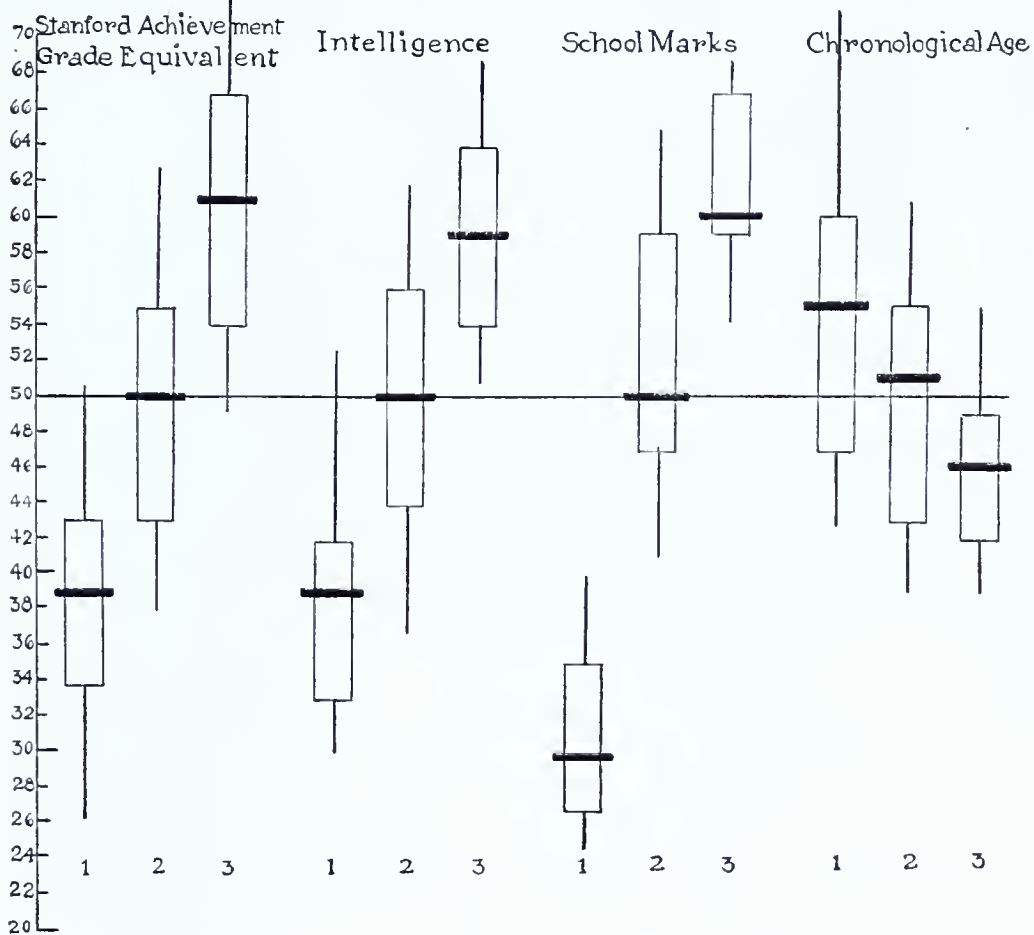
The contrast between these two groups of pupils is equally marked in their scores on objective tests in relation to the school appraisal of the quality of their achievement and ability. Table 25 shows the ranges, means and standard deviations of all educational and mental measurements for these pupils at the beginning of the second semester of this study, March 1927.

It is obvious that the means of all measures for these three groups of pupils show consistent increase from the mean of those who were retarded at this promotion period to the mean of those accelerated. However, here as in the Pittsburgh data, the amount of overlapping between these classifications is the significant thing. Chart 5 presents the distributions of these pupils, according to their Stanford Achievement composite scores, their I. Q.'s on the National Intelligence Test, their chronological age and their school marks.

Inspection of this chart shows considerable overlapping in each of these characteristics, except marks. On the basis of tested achievement there are 15 per cent of the pupils retarded who equal or exceed the scores of the lower quarter of those who are promoted; there are a few in the upper 10 per cent of those retarded who exceed the average achievement of those promoted and score as high as some pupils who were accelerated. This is true also of their I. Q. measurements. In chronological age those accelerated, as is to be expected, are the youngest group, although the upper age limit for those receiving no promotion and those receiving double promotion is the same. It should be noted that for each of these groups, the average achievement is approx-

CHART 5

Means, Quartiles, Tenth and Ninetieth Percentiles of Mental and Educational Measurements for Retardations, Regular Promotions and Accelerations
Washington-March 1927
391 Cases



1=Retardations (21)
2=Regular Promotions (343)
3=Accelerations (27)

imately equal to the average ability expressed in terms of I. Q. But in comparing the mean school mark with either achievement or intelligence, it is immediately obvious that while the average mark compares favorably with the measured attainments of those pupils who were promoted or accelerated, it is far below what is expected for the group who were not promoted. This leads to the inference that the school mark does not always measure the academic performance of an individual pupil, especially in the case of the pupil who fails. It leads also to the further consideration of what non-promotion or retardation really means. Is it a form of discipline? Should it be? Is the contention, often made, true that a high per cent of failure indicates high academic standards? The promotion statistics of one semester cannot give a fair picture. Such figures must be studied over a long enough period to give failures and accelerations a chance to even out.

Table 26 shows the ranges, means and standard deviations of the final educational and mental measurements of the total number of pupils making normal progress, slow progress or rapid progress over a period of three years. In this table, if a pupil is once retarded, and makes up his loss, he is considered to have made normal progress; similarly, if a pupil has been accelerated and loses his gain, he is grouped with those regularly promoted, $1\frac{1}{2}$ grade per semester.

Several items in this table should be especially considered. The average grade status of the group is the low seventh, but the average grade accomplishment is the high seventh. The average grade status of the pupils not promoted is the low sixth, one whole grade below that of the group as a whole. The grade achievement of this group, however, is slightly better than their grade location, but is one and one half grades below the grade accomplishment of the group. On the other hand, the pupils who were accelerated show a performance level one whole grade in advance of the mean performance of the total class, and little better than one grade ahead of the class mean achievement. This seems to support the statement that more children are classified too low than too high.

TABLE 26

RANGES, MEANS AND STANDARD DEVIATIONS OF CHRONOLOGICAL, EDUCATIONAL AND MENTAL AGES, GRADE LOCATION, STANFORD ACHIEVEMENT TEST GRADE EQUIVALENTS, I. Q.'s, AND COMPOSITE SCHOOL MARKS OF PUPILS RETARDED, REGULARLY PROMOTED AND ACCELERATED.

WASHINGTON-OCTOBER 1926—JUNE 1929

391 CASES

Measure	Retarded—67			Regularly Promoted—215			Accelerated—109			Total Group—391		
	Range	M.	S.D.	Range	M.	S.D.	Range	M.	S.D.	Range	M.	S.D.
Grade Status	5.4-6.4	6.0	0.21		6.9		7.4-8.9	8.0	0.32	5.4-8.9	7.0	0.48
Stanford Gr. Equivalent	3.0-8.9	6.2	0.97	5.0-10+	7.5	1.02	5.0-10+	9.0	1.0	3.0-10+	7.7	1.37
I. Q.	70-139	96.2	13.04	70-149	112.3	14.97	90-159	128.0	11.58	70-159	114.0	17.34
Chron. Age	10:0-15:9	12:9	11.40	10: 0-15:9	12:3	10.20	10:0-13:11	11:9	7.48	10:0-15:9	12:2	10.42
Mental Age	9:2-15:9	12:7	13.96	10:10-15:9	13:7	14.97	11:8-18:4	15:0	12.45	9:2-18:4	13:9	17.89
Educational Age	9:2-14:11	11:11	10.72	11: 7-16:7	13:4	13.15	11:7-17:6	14:11	14.11	9:2-17:6	13:7	17.76
Marks	5.0-11.0	7.3	1.34	5.0-12.0	9.0	1.52	3.0-12.0	8.9	1.79	3.0-12.0	8.4	1.64

Chart 6 shows the overlapping in all measures that has accumulated in three years time. The greatest change is to be seen in the overlapping in the school marks for these pupils. While the average mark of the pupils who failed is much below the common mean, it should be noted that the average mark of those who were accelerated is below the average of those who were regularly promoted. Indeed, the whole distribution of marks for those who have made rapid progress through school is lower than that for those who have progressed regularly. On what basis, then, were these pupils accelerated?

Since the subjective rating of the different teachers is finally the measure of school success, how can the school justify acceleration for a group of pupils, that are shorter by its own measure than another group of pupils who have only progressed regularly through school? Is it possible that other qualities, important as they may be, are given more weight at promotion time than the school's own measure of academic tasks satisfactorily completed? If the promotion practice of this system were based on the age-concept of a grade, this situation might be understood. But later evidence will show that, in general, the subject mastery concept of a grade is the one which influences the advancement of a pupil from one grade to another, in this city. Therefore, this situation cannot be explained on this basis. It is obvious that the school has in some way selected for acceleration the most able group on the basis of every objective measure of both achievement and intelligence. But this only emphasizes the haphazard method of the selection.

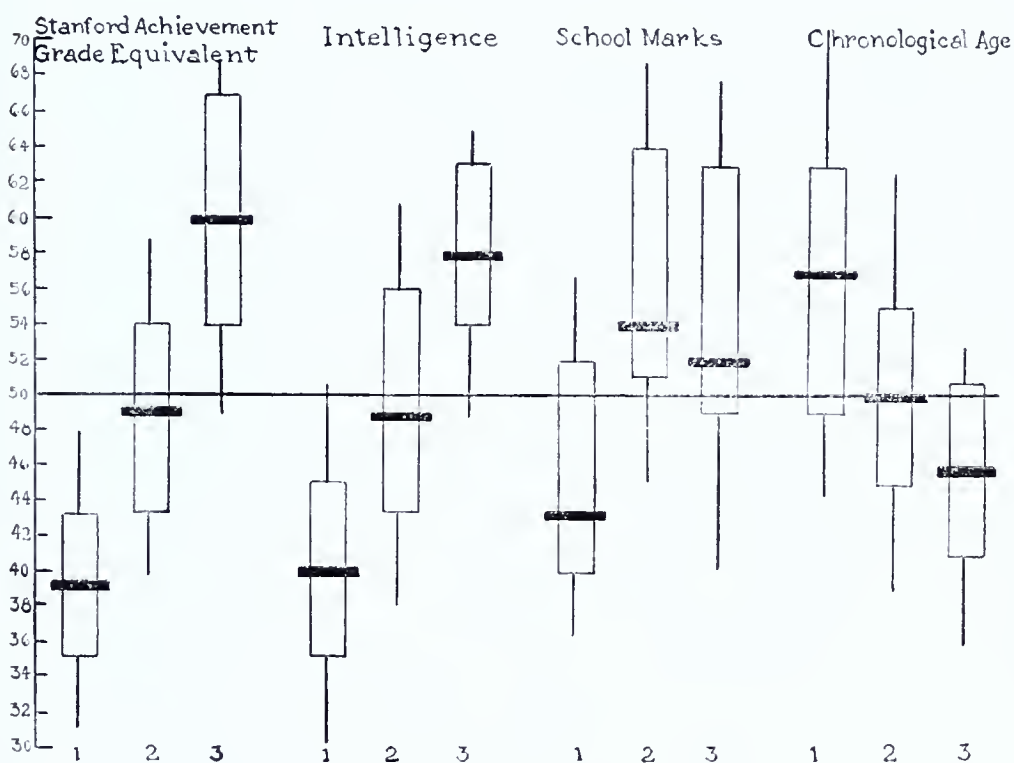
The differences between the mean performance of this group and their grade position assigned by the school are always in favor of their measured grade achievement and are consistently larger than the differences between these measures for the Pittsburgh group.

In other words, the pupils of this group are always graded at least one half grade lower than their mean grade performance indicated by the Stanford test.

In a school system operating on a policy of promotion founded on the concept that a school grade signifies a cer-

CHART 6

Means, Quartiles, Tenth and Ninetieth Percentiles of Mental and Educational Measurements for Total Retardations, Regular Promotions and Accelerations
 Washington October 1926 - June 1929
 391 Cases



1 Retardations (67)
 2 Regular Promotions (215)
 3 Accelerations (109)

TABLE 27
MEAN DIFFERENCES BETWEEN STANFORD ACHIEVEMENT
GRADE EQUIVALENTS AND SCHOOL GRADE
LOCATIONS
WASHINGTON
OCTOBER 1926-JUNE 1929

Dates	St. Ach. Gr. Eq. ¹			Sch. Gr. Status ²			r	D		σ_{diff}	D.
	M ₁	σM_2	S.D.	M ₂	σM_2	S.D.		12	M ₁ M ₂		
Oct. 1926	4.7		0.64	4.1					0.6		
Mar. 1927	5.1	.038	0.75	4.6	.009	.18	0.38	0.5	.035		14.3
Oct. 1927	5.6	.047	0.93	5.2	.016	.32	0.61	0.4	.039		10.2
Mar. 1928	6.2	.055	1.09	5.7	.018	.37	0.66	0.5	.045		11.1
June 1929	7.7	.069	1.37	7.0	.024	.48	0.68	0.7	.055		12.7

tain amount of curriculum materials graded as to difficulty, progress from one grade to the next should depend upon satisfactory completion of the subject matter of one grade as prerequisite to the one next above it. In that case the natural expectation would be that the difference between the grade status of the group and its mean achievement should become smaller as time affords opportunity for more accurate knowledge of the individual. However, Table 27 presents evidence that this is not so.

In October 1926, all these pupils were in the low fourth grade, although two-thirds of them demonstrated a level of performance between the low fourth and low fifth grades. Three years later, two thirds of this group have a grade status between the low sixth and low seventh grades, but on the basis of their measured achievement their grade equivalent ranges from the low sixth to the low ninth grades.

The system, attempting to meet the educational needs of these pupils by regulating their progress in accordance with their pace, has erred on the side of conservatism. Mastery of subject matter is the criterion most often given by school officials as the fundamental basis for determining promotion. Beatty (118) comments that readiness to undertake the next successive unit of work should be considered of more importance in decisions regarding pupil advancement than mere meticulous compliance with all the details of the work of the previous grade. Five successive times stand-

ard tests have given evidence that the material of these grades has been mastered. Measured by this standard these pupils are classified too low.

The consistency of these results is shown in Table 28. It will be noted that in October 1926 there were eight half grade intervals, and in June 1929 there were fifteen half grade intervals. This, however, does not mean that the test is inconsistent to that degree, as will be shown later. It does indicate, however, that within these smaller intervals

TABLE 28
INITIAL AND FINAL STANFORD ACHIEVEMENT GRADE
EQUIVALENTS AND SCHOOL GRADE
STATUS
WASHINGTON
391 CASES

		School Grade Status																
St. Ac. Gr.Eq.		3		4		5		6		7		8		9		Total		
		L	H	L	H	L	H	L	H	L	H	L	H	L	H			
L		10				1												1
3																		
H		31																
L		106				1												1
4																		
H		127				3												3
L		66						8	4	1								13
5																		
H		42				2 12		7								21		
L		6				3 12		20								35		
6																		
H		3				1 11 35									47			
L								6	51	6	1						64	
7																		
H								3	33	11	1						48	
L								2	26	9	3						40	
8																		
H								2	22	17	5	1					47	
L									9	8	2	3					22	
9																		
H								5	10	3						18		
10- -								3	15	6	6	1					31	
Total		391				1 10 56 215		77	21	10	1						391	
		October 1926						June 1929										

At Grade	264	67.52%	At Grade	169	43.22%
Graded too low.....	117	29.93%	Graded to low.....	197	50.39%
Graded too high.....	10	2.56%	Graded too high.....	25	6.39%

of seemingly homogeneous individuals, are latent differences that come out with training and opportunity. It substantiates the statement that the goal is not won, when a child is once correctly placed in school; grading must keep pace with the expanding abilities and attainments of these pupils, as they are discovered and developed. Further, this table shows that in 1926, counting those pupils correctly placed whose achievement score was one-half grade above or below their grade status, the school had fully two-thirds of them

TABLE 29
FINAL STANFORD ACHIEVEMENT GRADE EQUIVALENTS
AND GRADE STATUS OF PUPILS WITH INITIAL
STANFORD ACHIEVEMENT GRADE EQUIVA-
LENTS WITHIN ONE-HALF GRADE
OF SCHOOL STATUS.
WASHINGTON
391 CASES

Stan. Ach. Gr. Equiv.	School Grade Status												Total	
	4		5		6		7		8		9			
	L	H	L	H	L	H	L	H	L	H	L	H		
4 L														
4 H					1									1
5 L					7	3	1							11
5 H					2	12	7							21
6 L					3	11	16							30
6 H					1	11	32							44
7 L					5	48	7	1						61
7 H					3	30	6	1						40
8 L					1	16	4	2						23
8 H						11	8	2						21
9 L						2	3	1	2					8
9 H						2	1							3
10+									1					1
Total					6	51	167	30	7	3				391

in the grade commensurate with their achievement; but in three years, instead of increasing this number, as the opportunity offered itself, the school has correctly estimated the proper position of only forty-three per cent. Correspondingly, the percentage of pupils classified too low has increased, as has the percentage of those graded too high. Following these cases through group by group, it is apparent that the performance of these pupils at the end of three years is consistent in its general trends, with their initial performance. (Tables 29 and 30.) Those testing high in the beginning test equally high at the end of the study. Similarly, those testing low in the beginning still test low. Of the ten pupils whose achievement was one grade below their grade status in October 1926, two had managed to even their achievement with their grade placement, one of these finishing even with normal progress; two had decreased the difference between their status and their performance; four had maintained the same difference and the remaining two had dropped still farther below their grade location. Indeed, one of them made the same approximate score after three years of instruction.

At the upper end of the scale, of the nine pupils testing two or more grades above their grade location in 1926, only one pupil scored as low as this three years later; two had increased their lead to three grades and the other six had stepped up their performance at least three and one-half grades ahead of their grade status. School appraisal of their mental and educational capital has never caught up with the real value of their academic possessions.

C. Chronological, Educational and Mental Over-ageness and Under-ageness in Relation to Promotion.

If the basis of promotion is in the main mastery of subject matter, the percentages of chronological over and under-ageness should show appropriate changes. Although the elementary school curriculum is divided into eight successive units of one year each, there is no biologic justification for this expressed in evenness of growth. Therefore, a spreading out among the pupils of a group would be ex-

TABLE 30
FINAL STANFORD ACHIEVEMENT GRADE EQUIVALENTS
AND SCHOOL GRADE STATUS OF PUPILS WITH
INITIAL STANFORD ACHIEVEMENT GRADE
EQUIVALENTS AS INDICATED.

WASHINGTON

Initial Score—1 grade below status.										Initial Score—1 grade above status.									
School Grade Status										School Grade Status									
St. Ac. Gr.Eq.	3		4		5		6		Total	St. Ac. Gr.Eq.	6		7		8				Total
	L	H	L	H	L	H	L	H			L	H	L	H	L	H			
L					1				1	L			2						2
3										6									
H										H			2						2
L							1		1	L	1	1	1						3
4										7									
H						2			2	H		2	5						7
L							2		2	L		8	3	1					12
5										8									
H										H	1	8	8	2	1				20
L							1	2	3	L		5	4						9
6										9									
H								1	1	H		2	1						3
Total					1	3	3	3	10	10- -		1	3	3		1			8
										Total	2	31	25	6	1	1			66

Initial Score—1½ grades above status. In. score—2 or more gr. above stat.

School Grade Status								School Grade Status							
St. Ac. Gr.Eq.	6		7		8		Total	St. Ac. Gr.Eq.	6		7		8		Total
	L	H	L	H	L	H			L	H	L	H	L	H	
L								L							
6								6							
H								H							
L								L							
7								7							
H			1				1	H							
L	1	2	2				5	L							
8								8							
H			2	2	1		5	H	1						1
L			2	1	1	1	5	L							
9								9							
H			1	7	2		10	H			1	1			2
10- -			2	10	1	3	16	10- -			2	2	2		6
Total	1	10	22	5	4		42	Total	1	3	3	2			9

pected if they were promoted only after satisfactory completion of work. Table 31 shows that this spread does take place to some extent in Washington. The number of pupils under-age for their respective grades consistently increases; the number of pupils over-age varies little and the number of pupils at age decreases. This shows an increasing effort to meet the needs of the young able pupils in this group by permitting them to progress more rapidly. Whether it

TABLE 31
NUMBERS AND PERCENTAGES OF CHRONOLOGICALLY
AT AGE, OVER-AGE AND UNDER-AGE PUPILS
FOR THEIR RESPECTIVE GRADES.
WASHINGTON
391 CASES

Dates	Under Age		At Age		Over Age		Total
	No.	Per cent	No.	Per cent	No.	Per-cent	
Oct. 1926	41	10.49	202	51.66	148	37.85	391
Feb. 1927	70	17.91	212	54.21	109	27.88	391
Oct. 1927	73	18.67	171	43.74	147	37.59	391
Feb. 1928	105	26.85	170	43.48	116	29.67	391
Feb. 1929	126	32.23	160	40.92	105	26.85	391

shows equal consideration for the slow learners in the group cannot be determined from these data.

However, here also the young child in the group is the brighter child. Chart 7 yields the information that the eleven pupils in the Washington group who were eight years old when in the low fourth grade had an average I. Q. of one hundred and thirty-five, while the five twelve year olds have an average I. Q. of seventy-three. Table 32 shows that the over-age child is consistently less able than the under-age child.

A picture of educational age grade placement over a three year period is presented in Table 33. In October 1926 there were only ten pupils educationally under-age, for the low fourth grade as against two hundred and seventy-two who were over-age, on the basis of tested educational attainment. At the first promotion period an attempt is made to adjust this with the result that twelve pupils still are under-age, and two hundred and two are over-age and one hundred

CHART 7

Distribution of Chronological Ages with National Intelligence
Test I.Q.'s for a Given Chronological Age
Washington
391 Cases -

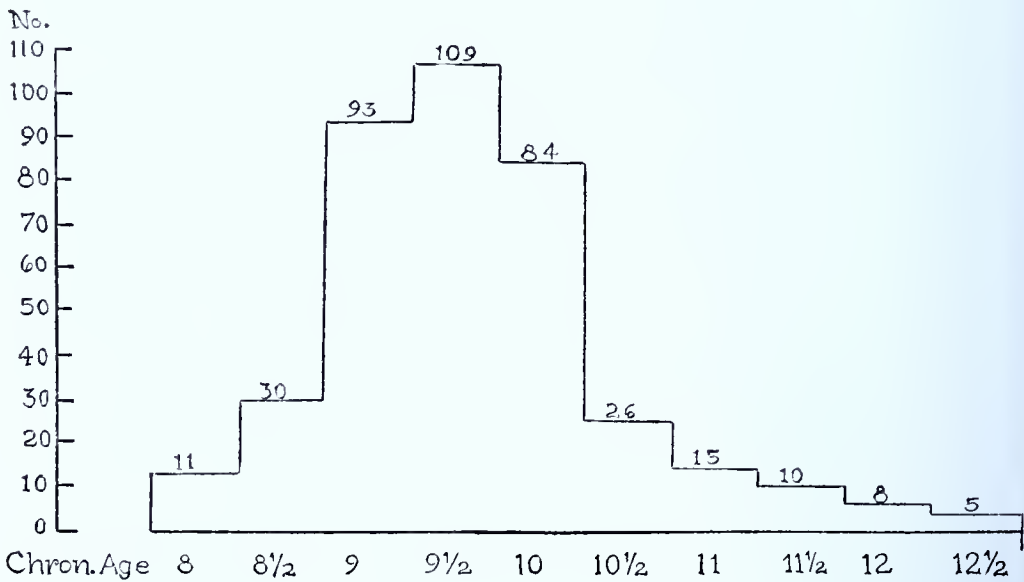
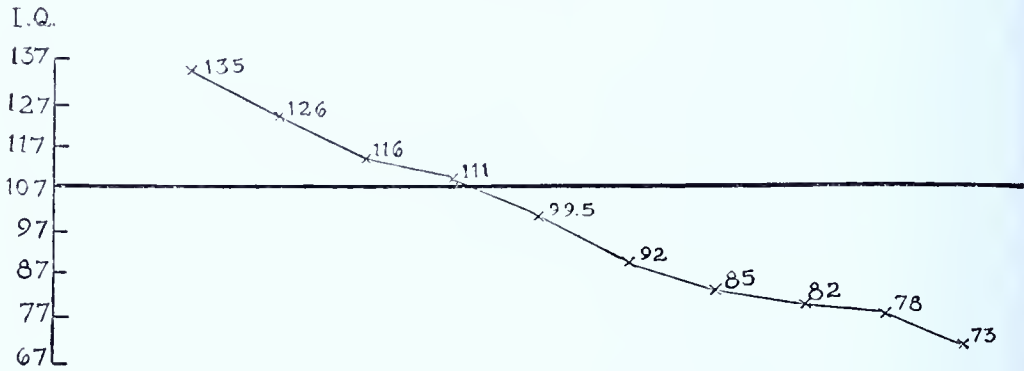


TABLE 32
 MEDIAN I. Q. OF PUPILS CHRONOLOGICALLY
 OVER-AGE AND UNDER-AGE.
 WASHINGTON

	October 1926	October 1927	June 1929
Over-Age	92.75	96.5	98.4
Under-Age	126.75	127.7	133.6

and seventy-one are properly placed on the basis of their educational age. At the end of three years, however, after five promotion periods when adjustment should have been made to meet the demonstrated needs of these pupils, there are twenty-five still unprepared for the level of work they are attempting to do, and two hundred and seventy-seven who have shown semester by semester that they are already familiar with the materials of the course of study presented to them.

Furthermore, of the pupils over-age in March 1927, six are pupils who were denied promotion the month before and of those pupils over-age in June 1929, thirty-one had been at some time retarded during these three years.

That there is equally wide variation in mental over and under-ageness is shown in Table 34. According to their ability, measured by the National Intelligence Test, at the beginning of the study eighty-three pupils were classified too high according to mental age and two hundred and fifty-one were classified too low. In the adaptations incident to the first semester's promotion, the number of those mentally under-age for their grade was reduced to thirty-six, but the number of those over-age increased to two hundred and seventy-five. In three years of adjustment for these pupils the numbers under-age and over-age became forty-nine and three hundred respectively. To put this in another way, in 1926 fifty-five per cent of this group were mentally over-age for their grade status. After three years in school approximately seventy-seven per cent of these pupils were still mentally over-age for the grade they were attending.

TABLE 33
EDUCATIONAL AGE-GRADE TABLE¹
WASHINGTON—391 CASES

October 1926												
School Grade Status												
Educational Age	3			4			5			6		
	L	H	L	L	H	L	L	H	L	L	H	H
9:0				10								
9:6				31								
10:0				78								
10:6				96								
11:0				118								
11:6				45								
12:0				10								
12:6				3								
Total				391								
March 1927												
School Grade Status												
Educational Age	3			4			5			6		
	L	H	L	L	H	L	L	H	L	L	H	Total
9:0				3	1							4
9:6				2	8							10
10:0				10	57							67
10:6				3100	2							105
11:0				2	83	6						91
11:6				1	56	8						65
12:0				28	5	5						33
12:6				8	3	3						11
13:0				2	3							5
Total				21343	27							391

June 1929												
School Grade Status												
Educational Age	5			6			7			8		
	L	H	L	L	H	L	L	H	L	L	H	Total
9:0	1											1
9:6		1										1
10:0		3										3
10:6		8	4			1						13
11:0		2	12	7								21
11:6		3	12	20								35
12:0		1	11	35								47
12:6			6	51	6	1						64
13:0			3	35	9	1						48
13:6			2	24	11	3						40
14:0			1	22	18	5	1					47
14:6				9	8	2	3					22
15:0				5	10	3	2					18
15:6				3	1	3	2					18
16:0					1	2	3					6
16:6					4	1	1	1				7
17:0												
Total	1	10	55	215	78	21	10	1				391

¹ Educational Age-Grade Equivalent from Manual of Directions Stanford Achievement Test

TABLE 34
 MENTAL AGE GRADE CHART
 WASHINGTON
 391 CASES

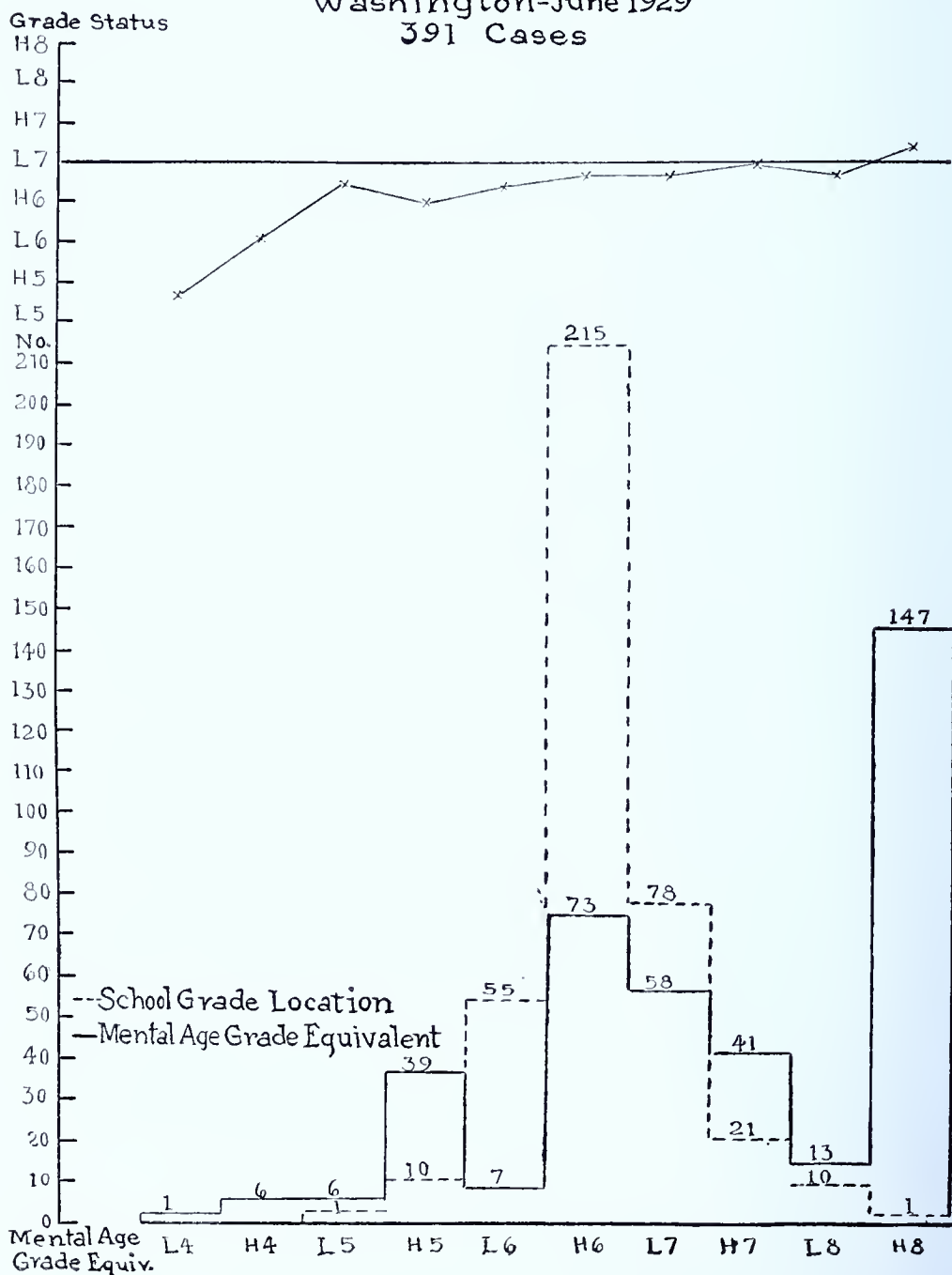
October 1926 School Grade Status							March 1927 School Grade Status							Total
Mental Age	3 L H	4 L H	5 L H	Mental Age	4 L H	5 L H	6 L H							
7:8	17			8:8	5	3	8							
8:8	66			9:8	7	28	35							
9:8	57			10:0	6	68	74							
10:0	104			11:0	2	124	5	131						
11:0	75			11:3	70	7	77							
11:3	42			12:0	1	33	6	40						
12:0	14			12:2	10	2	12							
12:2	10			13:0	5	4	9							
13:0	4			13:6	1	2	3							
13:6	2			14:1	1		1							
Total	391			14:6										
				15:3										
				15:6		1		1						
				Total	21	343	27	391						

June 1929 School Grade Status											Total
Mental Age	5 L H	6 L H	7 L H	8 L H	9 L H						
10:0	1	3	1			5					
11:0		1	2	4		7					
11:3		3	11	6		20					
12:0		1	10	15		26					
12:2		2	10	25	3	41					
13:0			8	45	4	58					
13:6		1	8	29	7	45					
14:1			4	25	6	38					
14:6			1	12	2	15					
15:3				2	3	5					
15:6			1	51	52	131					
15:7											
Total	1	11	56	215	77	391					

¹ Mental age Grade Equivalents from Manual of Directions, National Intelligence Test.

CHART 8

Distribution of School Grade Locations and Mental Age Grade Equivalents, with Average Grade Location for Given Mental Age Grade Equivalent
Washington-June 1929
391 Cases



These are the pupils whom Terman¹ considers the real retardates, those brighter children in each grade, who may be regularly promoted each year, yet who are retarded in their opportunity for progress through school. These are the individuals who tend to become the educational misfits, and perennial nuisances.

Chart 8 illustrates in graphic fashion the distribution of mental age grade equivalents with the actual grade status of these same pupils and shows the average grade location of each mental age group. Thus we see the amazing discrepancies that can occur in a system which attempts the classification and promotion of pupils without a sound basis of objective evidence, cumulating year by year to afford a true picture of educational development. There were one hundred and forty-seven pupils who in June 1929 were capable of doing the work of the high eighth grade. The average grade status of that group was little better than the low seventh grade; and in the whole group of three hundred and ninety-one pupils the school had classified only one in the high eighth grade. At the other end of the scale there were thirteen pupils whose intelligence would have placed them in the low fifth grade or lower. Yet here, too, the school found only one child whose ability seemed no better than the low fifth grade. Between these two extremes are all the rest, more than fifty per cent of the whole group, drifting between the two currents: now pulled downstream by the tide of academic conservatism and again swept upstream by the very force of their own inherent ability.

¹ Terman—"The Intelligence of School Children", p. 24.

Summary and Discussion

A. Summary

I. Pittsburgh

1. Promotion percentages are consistent and high for each promotion period.
2. Approximately nine out of ten pupils show regular progress through grades seven, eight and nine.
3. A pupil once failed has almost no chance to make up his loss; about one chance in ten of losing more ground and about nine in ten of progressing regularly after the retardation.
4. A pupil once accelerated has two chances in ten of losing his gain; seven chances in ten of maintaining it and about one chance in ten of being accelerated further.
5. There are more pupils retarded than accelerated, the proportion being about ten in one hundred who were retarded as against six in one hundred who were accelerated.
6. The overlapping of all measures for those pupils retarded, accelerated or regularly promoted does not decrease notably the longer these pupils stay in school.
7. The differences between the means of the Stanford Achievement Test grade equivalent and school grade status are shown to be real differences and not due to chance. Further, these differences are greater after three years in school than at the beginning of this study. Where a difference exists between these measures, it is always in favor of school status, indicating that these pupils are in general graded too high.
8. In general, the results on the Stanford Achievement Test are consistent from year to year: pupils scoring

low in achievement at the beginning of the study tend to score low after three years; likewise, those scoring high on the initial test score high on the last test.

9. The percentages of chronological over-ageness and under-ageness for these pupils remain fairly constant through out three years, showing about three times as many pupils over-age as under-age.
10. In 1928, educational over-ageness and under-ageness is about equal. In 1931, there are approximately twice as many pupils educationally over-age as there are pupils who are educationally under-age.
11. The percentage of mental over and under-ageness increases from twice as many pupils mentally over-age as under-age, to approximately three times as many pupils over-age as under-age.
12. Regularity of promotion, consistency in percentage of chronological over and under-ageness, increase in educational and mental over-ageness support the theory that this school system promotes on an age basis.

II. Washington

1. Promotion percentages in Washington are not so high as in Pittsburgh, nor so regular.
2. The chances are about even that pupils in this group will have normal progress through grades four, five and six.
3. A pupil once failed has better than one chance in ten to fail again; about one chance in ten of making up his loss and about seven chances in ten of progressing regularly after his first retardation.
4. A pupil once accelerated has barely one chance in ten of losing his gain; about six chances in ten of maintaining it and three in ten that he will progress still further.
5. There are more pupils accelerated than are retarded, the proportion being about twenty-nine in one hundred who are accelerated compared to nearly twenty in one hundred retarded.

6. The overlapping of all measures for the pupils regularly promoted, accelerated or retarded, does not decrease to any marked degree, with continued school attendance. In the case of school marks, the overlapping is notably increased at the end of the third year period.
7. The difference between the mean grade achievement and grade location is a significant difference and larger at the end of three years than at the time of the initial test. This difference is always in favor of the Stanford Achievement grade equivalent, indicating that these pupils are on the whole graded too low.
8. The performance of these pupils shows consistent trends over three years, indicating that the test is reliable. The slow learner measured by the initial test does not prove to be a fast learner measured by the last test; similarly the able pupil tends to maintain his rank.
9. The percentage of pupils chronologically over-age decreases and the percentage of those under-age increases as retardation and acceleration accumulate in three years.
10. The number of pupils educationally over-age and under-age remains fairly constant during the course of the study. These percentages also indicate that more pupils are graded too low than too high, since there are approximately ten times as many pupils educationally over-age as there are under-age.
11. There were approximately five times as many pupils mentally over-age for their respective grades as under-age at the end of the study as compared with about four times as many mentally over-age as under-age at the beginning of the study.
12. Changing percentages of promotion, more acceleration than retardation, indicate that to some extent this school system is attempting to adjust the offerings of the school to the needs of the pupils. The large number of pupils who are educationally and mentally

over-age suggest that the abler pupils are not being as well adapted to the educational environment as are the slower pupils.

III. General

1. Retardation and acceleration do not tend to even themselves out over a period of years.
2. The promotion rate for any one academic year is not a fair picture of the actual promotion facts in any school system.
3. Subjective measures prove unreliable bases for promotion since in both school systems there are pupils who have been retarded who have records above the average of those accelerated; likewise there are those accelerated whose marks are below the average of those retarded.

B. Discussion

Such data as these show that generalizations regarding promotion facts cannot be made with any degree of reliability. It has been accepted that in the long run, retardations and accelerations were evened out: that a child retarded one year would be accelerated some later time, so that he might finish "with his class." Similarly it was thought that a child accelerated would perhaps at some point mark time until his group caught up with him. Such generalizations could not be refuted by annual statistics of any sort, and figures on the same pupils for any consecutive period of years have not been available.

Promotion statistics in most school systems are made up for each academic year. At any one time, the promotion rate for a school may be high, because Mary who has been repeating the eighth grade this year, is promoted to the ninth, and John who was accelerated last year is also promoted to the ninth. Both of these are counted "regularly promoted," one grade for one year, or one half grade for one half year as the case may be; whereas in any cumulative analysis Mary is retarded and John is accelerated, and both may retain these positions for the balance of their school careers.

Furthermore, in many school systems, chronological age-grade statistics are taken as evidence of the efficiency of the grading or classification in the school. This evidence is based on the theory that a grade represents a certain level of maturity. Nothing at all is said about the readiness of a pupil for the work of a certain grade. It may be true that to be chronologically under-age for a grade generally signifies a certain amount of school brightness. But to be educationally under-age for a grade implies quite a different thing. It may imply a less amount of scholastic achievement and more scholastic conformity; it probably indicates less real educational accomplishment and more compliance with school routine. On the other hand, to be educationally over-age for a grade does not mean necessarily that a pupil has failed of promotion here and there along the line, and so has lost step with the age-group in which he belongs; it means rather that in order to keep step with his group, he must simply mark time!

Such data as these show that generalizations based on promotions and chronological age-grade tables are not tenable. We can know nothing of the real situation within a system unless we take time to get the long view and to consider the circumstances in relation to every contributing factor: the young, bright child; the older, slower pupil; and the mythical average youngster who goes along regularly one grade a year as he should.

Kelley¹ says' "We cannot level (ability) or rather differences in achieved ability, except by a training progressively inferior as the children are superior . . . A superior child, like every other child, will worry along wherever he finds himself, but will grow the most in grace and virtue when the environment exerts a steady pressure and demand for the best that he can live up to."

Similarly, slow learners should be given a chance to learn slowly. To goad a pupil to keep up with a group in work too difficult for his preparation or his ability, is to lay the foundations of behavior maladjustment and "problem" cases. Many studies have shown that there is more incidence of

¹ Kelley, T. L., "Again, Educational Determinism."

undesirable behavior among failing pupils than among those who pass. Proportionately, since the instruction is adapted to the ability of the middle fifty per cent of the cases, the slower pupils have a greater amount of stimulation for their ability than brighter ones.

At promotion time the teacher usually asks herself, has this pupil satisfactorily done the work of this grade? The outcome might be very different if she asked instead, can this pupil do the work of the next higher grade? In other words, is the satisfactory completion of the work of one grade, a necessary pre-requisite to satisfactory work in the next grade? Buckingham (61) does not think so. He believes that the decision should be on what the child needs to learn, rather than on what he has learned. This is an interesting statement of the case; however, it seems to need some qualifications. What a child needs to learn cannot always be determined by what he has learned. An estimate of an individual's knowledge at a certain time is not necessarily an indication of how much he has gained from some time previously. Therefore, a sounder basis of appraisal of needed learning would seem to be offered in the measured amount of increase in achievement and ability year by year. A consideration of these gains is the theme of the next chapter.

CHAPTER IV

PUPIL PROGRESS (Continued)

The absolute score on any test yields the information of the approximate point the pupil has reached at a given time, but it gives no indication of how much has been gained beyond what was known before. Two pupils may make exactly the same score on a test, or receive exactly the same mark in a course, but one may have gained twice as much as the other. Pupil A, therefore, is ready to continue learning at this point, while Pupil B should be helped to some adjustment of his educational difficulties which have reached an impasse. Probably both should not be promoted, even though the achievement of both may equal the "passing" mark required by the school. Morrison¹ has discussed in detail what he calls the "Fallacy of the Passing Grade". Any quantitative measure breaks down at just this point: it cannot signify the amount gained; it indicates only the end product.

Hildreth (80) notes this same inadequacy in quantitative measures of achievement and capacity. In a study of repeated measures of achievement and capacity on forty-two pupils in the Lincoln School she also reports that pupils tend to retain their respective ranks and that rates of progress are fairly even. She found that end status was a result of the initial status plus the gain a pupil makes in the interval. Thus if a pupil has a high initial status it may be impossible for him to make a proportionate gain. Therefore, his final status may be relatively lowered by high initial status. This is clearly indicated in the case of B. A., a boy in the low fourth grade in Washington. In 1926 this child, eight years and eight months old, received a composite score on the Stanford Achievement Test of 55, the equivalent of high

¹ Morrison—"The Practice of Teaching in the Secondary School", pp. 38-48.

sixth grade performance and yielding an educational age of twelve years, four months. His score on the National Intelligence Test was 119, the equivalent of a mental age of 158 months, and equal to an I. Q. of 152. Numerically his scores consistently increased as shown in Table 35.

TABLE 35
RAW SCORES, MENTAL AND EDUCATIONAL AGES, I Q., AND
GRADE EQUIVALENTS OF PUPIL B. A.
OCTOBER 1926—JUNE 1929

Dates	Stanford Ach. Test			National Int. Test			School Grade Status	Chron. Age
	Comp. Score	Grade Equiv.	Educ. Age	Score	Ment'l Age	I. Q.		
Oct. 1926	55	6.5	12:4	119 _A	13:2	152	Low 4	8:8
Mar. 1927	60	7.1	12:9	140 _B	15:6*	171	Low 5	9:0
Oct. 1927	73	8.6	14:8	154 _A	15:6	160	Low 6	9:8
Mar. 1928	78	9.3	15:4	155 _B	15:6	143	Low 7	10:0
June 1929	91 [†]	10.0	16:11	161 _A	15:6	138	Low 8	11:3
Gain 9-26- 6-29	36	3.5	4:7	42	2:4		5	2:7

*Highest Mental Age listed in National Intelligence Test Manual, equivalent to a score on Form A of 136; on Form B of 133.

†A score of 82 on the old Stanford Achievement Test was equivalent to the 10.0 grade.

Obviously, if B. A.'s initial score had been lower, his final grade equivalent gain would have been larger; but since his initial grade equivalent was 6.5, his highest possible grade equivalent gain was 3.5 grades. Similarly, he was never adequately measured by the National Intelligence Test after the first time. There is the seeming paradox of a consistently decreasing I. Q., with a consistently increasing raw score on the test. The school honestly attempted to meet this boy's exceptional achievement and ability by allowing him to complete five school grades in three years. Even then, however, his grade status and his grade achievement were more than one grade and a half apart.

It is clear, therefore, that some pupils at the high end of the range in the beginning, make less gain than others scoring relatively lower on the initial test. That the slow learner in the beginning, however, does not prove to be the rapid learner in the end, was shown in Tables 29 and 30 in Chapter III. Table 36 shows the distribution of the gains of three years for each grade equivalent interval on the original Stanford Achievement composite score of the Pittsburgh pupils.

TABLE 36
DISTRIBUTION OF TOTAL GAINS ON STANFORD ACHIEVEMENT TEST ACCORDING TO GRADE INTERVALS
ON INITIAL TEST.
PITTSBURGH—JANUARY 1928—JANUARY 1931
474 CASES

Gain in 10ths of Grds.	Initial Composite Score on Stanford Achievement Test in Half Grade Equivalents.													Tot- al
	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10-	
0.0													1	1
0.2				2	2		3					2		9
0.7			6	7	7	3	4				2			29
1.2		3	4	8	14	4	12	2		8				55
1.7		1	12	20	21	9	15	3	21					101
2.2	1		6	26	22	20	53	25						163
2.7		1	8	12	27	16								64
3.2			3	5	18	20								46
3.7				4	7									11
4.2		1	1	2										4
4.7														8
5.2		1												1
Mean Gain	2.2	2.48	1.97	2.06	2.2	2.4	1.8	2.1	1.7	1.2	0.7	0.2	0	

From this table it is clear that these pupils do tend to hold their respective rank, and that rates of gain are fairly even, until the gain is halted by the limitations of the test and high initial status. The table also furnishes evidence in support of the fallacy of judging pupils by their rank in class. Pupil A, whose original score was the equivalent of tenth grade performance, has apparently made no increase in three years. Pupil B, on the other hand, because of lack of opportunity, or poor instruction, or because of a dozen

other circumstances, in the beginning only gave evidence of fourth grade achievement, but in three years he gained five grades, and at the end his performance was closely approximate to Pupil A. Should both these pupils receive the same treatment? On the other hand, Pupil C's academic acquisitions were equivalent to his grade status, low six, in January 1928. In three years he gained the equivalent of three grades in achievement so that his grade performance was still the equivalent of his grade status. Pupil D., however, was in 1928, on the basis of measured achievement, one grade and a half ahead of his status. But in three years his performance level has become equivalent to his actual grade location, low nine. What slowed up the progress of this pupil? Did he learn that it profited him nothing in opportunity to be ahead, and therefore he might as well do just enough to "get by"? Most educators would agree that these two pupils should not have the same disposition made of their cases.

How do these gains compare with other measures? Are the pupils making the largest amount of gains the brightest? Or the youngest? Do they receive the highest marks? Are they given appropriate recognition in school?

It was obvious from the data in the last chapter that the correlation between achievement and grade status is not a criterion for promotion decisions. In the Washington data the correlation as shown in Table 27 is sizable; in the Pittsburgh data, where the promotions are more routine, the coefficient is somewhat smaller, but is positive and indicative of relationship. (Table 16) In studying the relation between the gains made in the Stanford Test and the gains made in school, again the correlation method does not furnish the facts necessary for a real understanding of the situation. This is true of the Pittsburgh group, because there promotions were made in the main on an age-grade basis. The correlation coefficients shown in Table 37 between gains in school grade and gains in measured performance are very small and in one instance negative.

These coefficients yield only the information that there is almost no relation between the actual amount a pupil gains

TABLE 37
CORRELATION BETWEEN SCHOOL GRADE GAIN AND
STANFORD ACHIEVEMENT GRADE
EQUIVALENT GAIN.
PITTSBURGH
474 CASES

Dates	Coefficient of Correlation
January 1928-May 1929	0.149 ± .03
January 1928-January 1930	0.177 ± .029
January 1928-January 1931	0.104 ± .03
January 1930-January 1931	-0.094 ± .03

on a comprehensive standard test and the cumulative gain in the estimate the school places on his performance.

Again, it is admitted that there are learnings in school not measured by such a test as this; that there are attitudes, ideals and standards which perhaps cannot be adequately appraised by any test; but if the major part of school success is gauged by success in mastering certain subject matter units, then these results should be considered significant.

If the several performance gain intervals are plotted against the average grade gain for each, and in addition there is charted the average I. Q. and the average school mark, all in terms of standard deviation units reckoned from the common mean, a clear picture can be had of the situation. This picture is presented in Chart 9.

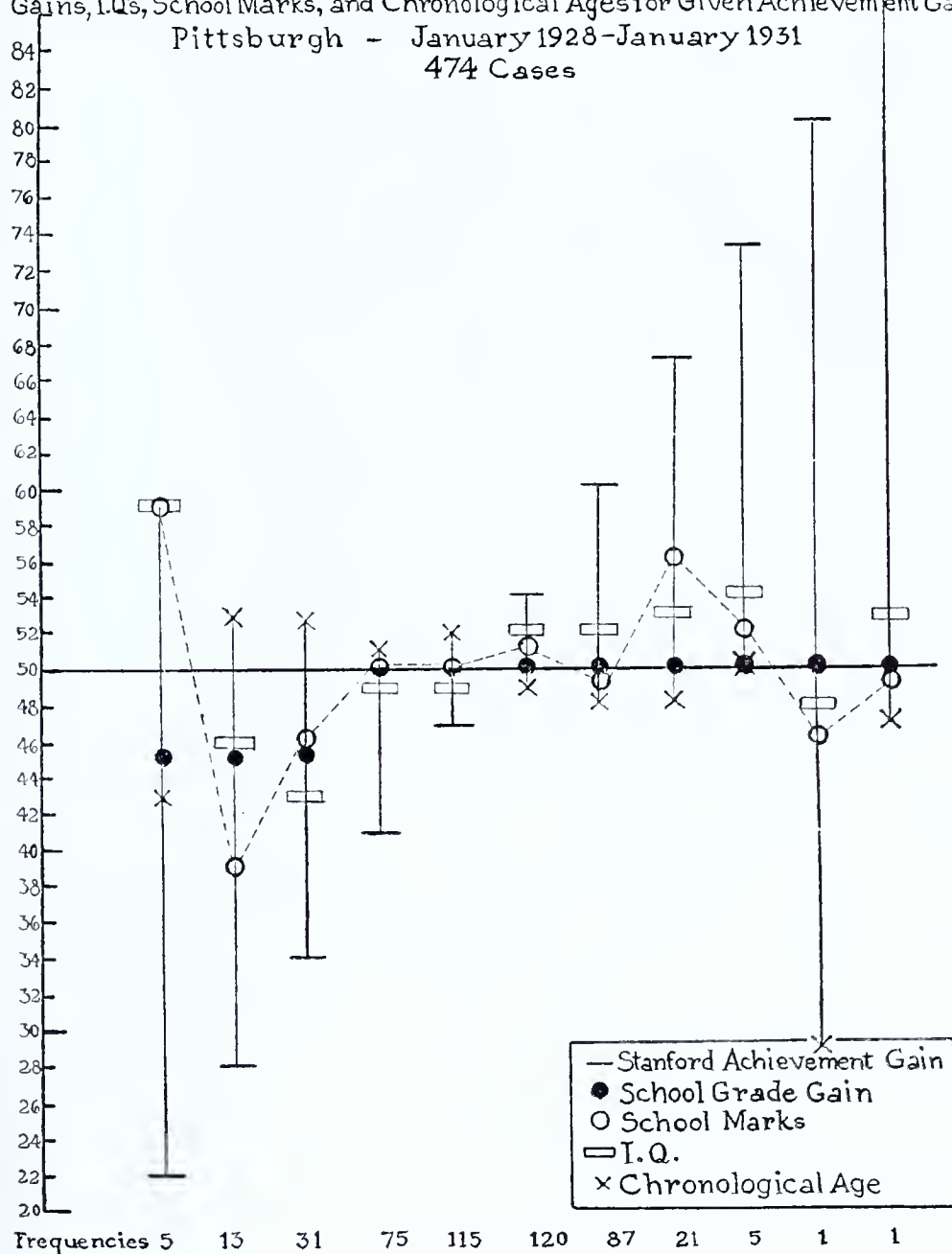
It must be remembered in reading this chart that some of the pupils making the least gain had high initial scores and vice versa. This chart covers the period of three years. It will be noted immediately that there is very little deviation from the mean in the gain in school grade status. This emphasizes again the absolute regularity of promotion in this system. Only forty-nine pupils showed any appreciable deviation from the mean gain of the group and these were the pupils who were retarded. It should also be mark-

CHART 9

Stanford Achievement Grade Equivalent Gains, with School Grade Gains, I.Q.'s, School Marks, and Chronological Ages for Given Achievement Gain

Pittsburgh - January 1928-January 1931

474 Cases



ed that the achievement gain and the grade status gain are never closer together than three tenths of sigma, and are as far apart at the extremes of the distribution as 3.8 sigma units. To show appreciable gain in achievement is therefore, no criterion of making a comparable gain in grade status. On the other hand, not to have gained in measured achievement does not prevent regular progress through school. Where the gain in achievement is below the mean the school grade gain is greater than the actual achievement gain. But where the gain in Stanford grade equivalent is above the mean, the gain in grade location is less than the performance gain. Likewise, where gain in achievement is less than the average, the mean I. Q. is above the gain in achievement and may be above or below the common average I. Q.; but as soon as the gain in achievement rises above the mean performance, the I. Q. is lower than the achievement gain. This is especially significant if the first two classes at the left of the chart and the last four classes at the right are omitted from consideration. Within this range are included those pupils who fall approximately one and a half sigma units above and below the mean. Those pupils making the greatest gains who had the lowest initial scores, and those making the least gains with in general the highest initial scores, are for the moment excluded. It will be seen then, that those pupils with less than average gain on achievement, have average I. Q., marks and school grade gain likewise below the common mean, but in advance of measured achievement, while those pupils who have made more than average gain in achievement have also more than average I. Q. marks and school grade gain, but consistently lower than objective measures of their achievement. How can this be accounted for? It seems hardly logical to attribute this to the unreliability of the Stanford Achievement test, when the group means on this same test have been so close to the group means of the grade location of these pupils, and also in view of the fact that where there was a difference it was in favor of the school's estimate of their ability. It rather seems to be evidence of the fact that these pupils are being judged by the school only on

what they have learned in school, and that such a comprehensive measure of general accomplishment as this test, is giving them an opportunity to produce all the items of effective knowledge they have acquired from whatever source.

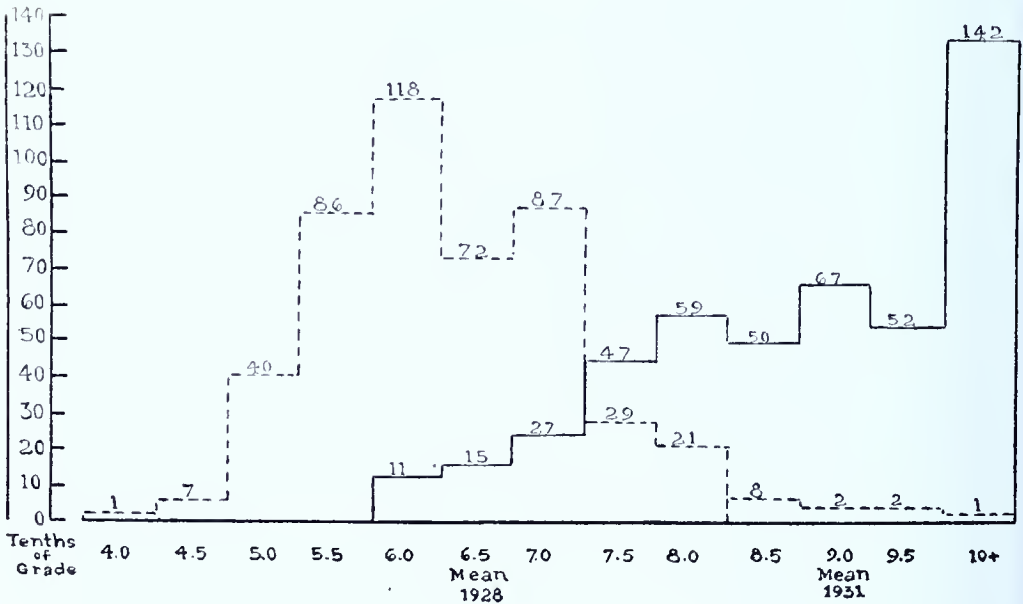
It is difficult to understand the point of view, all too frequently encountered, that what has not been learned as a result of actual instruction, class assignment or class discussion, is not legitimate learning. Pupils very early learn that what they have acquired on their own initiative without the aid or suggestion of the teacher is not usually welcome in the school room. It is probable that this is the underlying cause of the "get by" attitude so deplored by school administrators; it is doubtless at the bottom of the "credit chasing", of the absolute lack of interest so many pupils show in any kind of intellectual exercise beyond the limits required by the instructor.

Dickson (11), Thayer (45) and others recognize the difficulty here presented and suggest that the only way to correct this is by the consistent use of reliable tests, so that a pupil may have a chance to show year by year on a comprehensive, accurate scale how much he has gained from whatever source. In other words, pupils should be instilled with the idea that education is active and not passive; that it is doing something for yourself, not having something done to you.

There were three hundred and forty pupils in this group who in 1928 demonstrated a level of achievement on the Stanford Achievement test as good or better than some pupils were able to show after three years in school. (Chart 10) While only five in 1928 equaled or exceeded the average achievement of the group in 1931, it is to be marked that in 1931, twenty-six were still below the average achievement of the 1928 group. Whether the five with the high initial achievement had any incentive offered them to learn more than was actually presented in class of course cannot be determined by these data. However, few children will bother to inform a teacher that they know more about a subject than the discussion has brought out. One case that came to the attention of the author illustrates this

CHART 10

Overlapping of Initial and Final Grade Equivalents
of Stanford Achievement Composite Scores
Pittsburgh - January 1928-January 1931
474 Cases



Initial Grade Equivalent - 1928 ----
Final " " 1931 —

situation aptly. A little girl, seven, in the first grade, was busily engaged one evening with the daily newspaper. It came out that as a class assignment she had been instructed to take the front page of any paper and mark all the words on it which she recognized. Since the child knew how to read when she went to school, her mother, looking over her shoulder said, "Why, Jane, you know more of those words than you have marked." With patient diligence Jane went on checking words, and in a superior tone replied, "But Mother, you don't understand. My teacher wouldn't like it at all if I marked words she hadn't taught me."

On the other hand, with thirty pupils in a room, most of whom do not know how to read when they come to school, how can the best and most conscientious of teachers find out the real educational status of any of them without some dependable scale by which to measure them? Many schools are at present making it their business to know something definite of the educational and mental equipment of the pupils in their classes. More are being added to the list every day. But without such knowledge it is not fair to put the entire responsibility for errors of judgment on the individual teachers. Teachers would welcome any device that would give them additional, accurate information about their pupils, that would help them to decide what is best for them as individuals.

TABLE 38

MEAN GAIN IN STANDARD ACHIEVEMENT GRADE EQUIVALENT AND SCHOOL GRADE STATUS.

PITTSBURGH

474 CASES

Gains (10ths of grade)	Jan.'30-Jan.'31 1 year		Jan.'28-Jan.'30 2 years		Jan.'28-Jan.'31 3 years	
	Mean	S. D.	Mean	S. D.	Mean	S. D.
Stanford Achievement Grade Equivalent	0.6	0.55	1.8	0.76	2.4	0.77
School Grade Status	1.2	0.11	2.2	0.16	3.2	0.19

Table 38 shows for varying intervals of time elapsed the average increase in measured achievement and grade location.

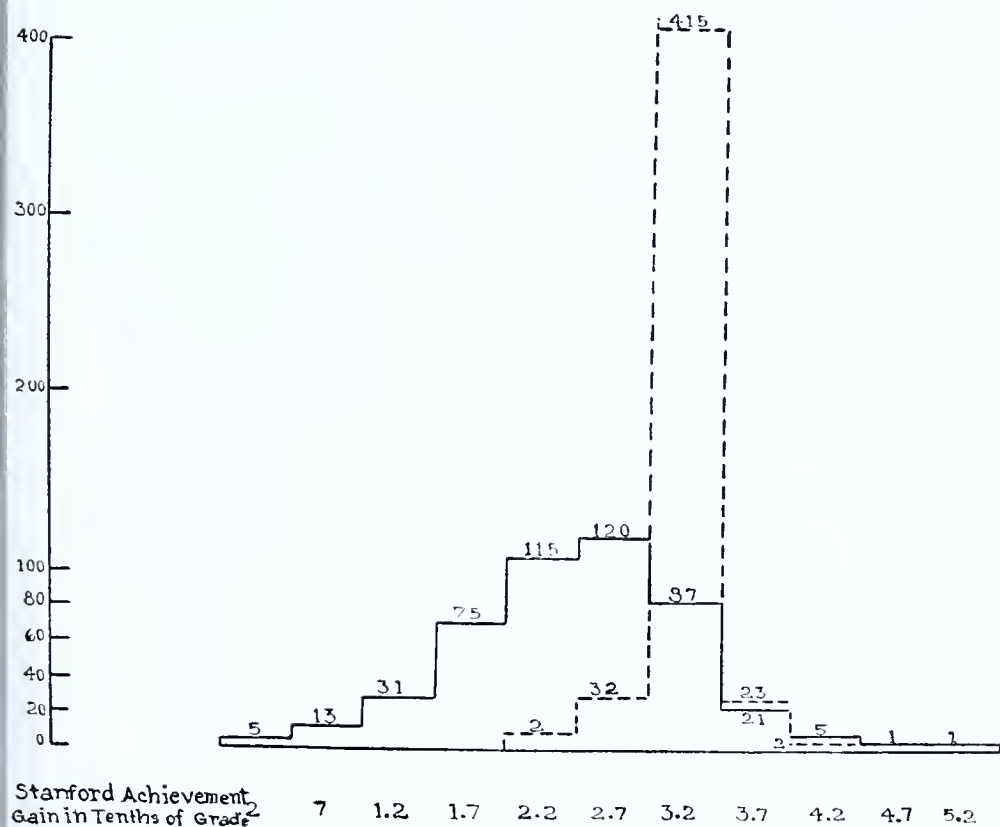
This table also shows distinctly the absolute regularity of promotion, the size of the standard deviation indicating how little variability there is in the group. On the other hand, the increase in accomplishment is consistent and steady. Again it should be noted that these data support the contention that on the average these pupils are graded too high in comparison with their measured achievement gain. While two thirds of these pupils gained in school grade status between three grades and three and four tenths grades, they gained in actual achievement between one and six tenths grades and three and two tenths grades. Chart 11 presents this graphically. It is not reasonable to suppose that the entire distribution of these pupils as to grade location should lie entirely above the mean of their distribution in achievement.

TABLE 39
DISTRIBUTION OF TOTAL GAINS ON STANFORD ACHIEVEMENT TEST ACCORDING TO GRADE INTERVALS
ON INITIAL TEST—WASHINGTON
OCTOBER 1926—JUNE 1929
391 CASES

Gain in Tenths of Grade	Initial Composite Score on Stanford Ach. Test In One-half Grade Intervals								Total
	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	
0.0	1								1
0.2				1					1
0.7	1	1	3	3	2				10
1.2	2	7	12	2	2				25
1.7	2	6	23	14	3	1			49
2.2		5	20	27	7	5	1		65
2.7	3	10	32	32	12	5			94
3.2	1	2	8	19	20	5	2	3	60
3.7			4	19	9	10	3		45
4.2			2	6	3	16			27
4.7			2	3	8				13
5.2				1					1
Mean Gain	1.8	2.05	2.3	2.7	3.1	3.4	3.3	3.2	391

CHART 11

Overlapping of Stanford Achievement Grade
Equivalent Gains and School Grade Gains -
Pittsburgh - January 1928-January 1931
494 Cases



In Washington, because the pupils were younger and in lower grades, the pupil who made no gain in three years in achievement did not fail to gain because of his high score in the beginning; however, the three pupils who did make the highest scores on the initial test, made a relatively lower gain than pupils who tested lower on the first test. Here, also it will be noted from Table 39 that the gains are consistent and in general correspond with initial status.

Because of the difference in promotion policy and the apparent attempt to meet the pupil differences by means of acceleration and retardation, the correlation between the gains in achievement and the gains in school is much higher in Washington than is the case in Pittsburgh, as is seen in Table 40.

TABLE 40
CORRELATION BETWEEN SCHOOL GRADE GAINS AND
STANFORD ACHIEVEMENT GRADE
EQUIVALENT GAINS
WASHINGTON
391 CASES

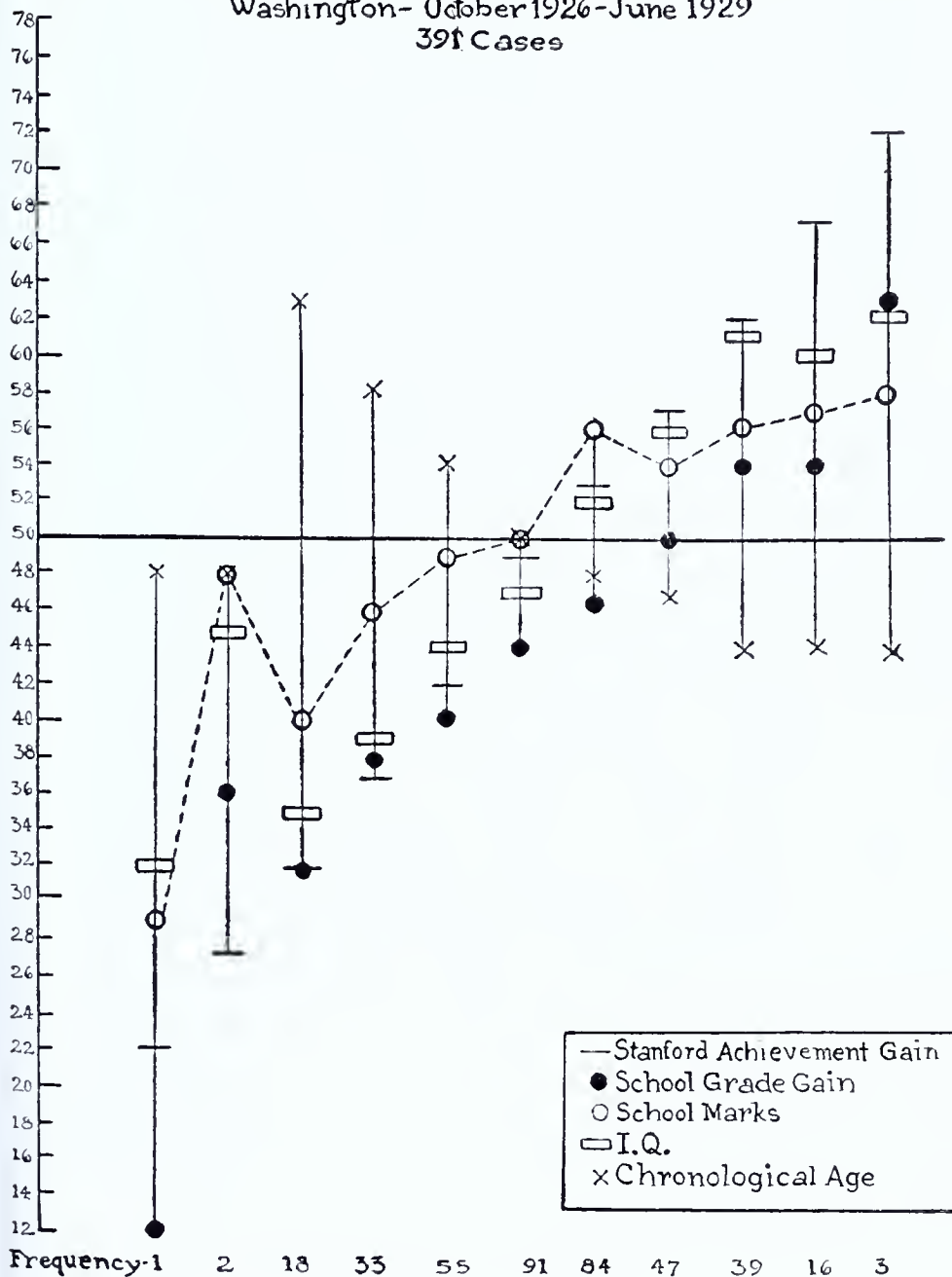
Dates	Coefficient of Correlation
October 1926–March 1927	0.21 ± .033
October 1926–October 1927	0.436 ± .028
October 1926–June 1929	0.59 ± .023
October 1927–June 1929	0.324 ± .031

It is evident from these figures that as one measure increases the other increases, in varying amounts for the different intervals of time. But just what relation the increase in one measure bears to the increase in the other cannot be determined from these coefficients.

The real relation of the performance gains to the mental ability, age and school marks of these pupils and to the average gain in school grade over a period of three years is shown in Chart 12.

CHART 12

Stanford Achievement Grade Equivalent Gains with School Grade Gains,
I.Q.'s, School Marks, and Chronological Ages for Given Achievement Gains
Washington- October 1926-June 1929
391 Cases



There will be noted at once a consistent increase in gain in grade position, supporting the contention that in this system a grade indicates a definite amount of **subject content**. In three instances, the grade location of these pupils equals or approximates very closely their grade achievement measured by the Stanford Achievement Test. Never does the difference between gain in status and gain in achievement become greater than 1.3 sigma units. If the extreme cases at each end of the chart are disregarded this difference never is more than eight tenths sigma units. Their school marks show the same consistent upward trend, paralleling their achievement and grade increase, always above their grade status, but falling below their performance when this rises above the average gain in performance of the group. The mental ability of the group is above their achievement gain in all cases where this gain is below the mean. However, the I. Q. is with one exception below the gain in accomplishment when this gain is above the mean group gain. Likewise, those pupils making the gains below average are in general older than those pupils gaining larger increments.

Again one is confronted with the seeming inconsistency between progress and school appraisal. Most school administrators and teachers will insist that promotion is based solely on achievement. If that is so, why does not the gain in grade level more nearly approximate the teachers' estimate of performance, the school mark? Entirely disregarding the evidence of the increase in measured achievement, the school marks of these pupils indicate that they should have gained more than they did gain in grade location. It has been emphasized many times throughout this study that other factors than intelligence and achievement are important, not only in school but later in life. But should they exert too much influence in the teacher's calculation of a child's knowledge of arithmetic or history? Moreover, should his progress through school be conditioned by such personality traits?

The writer recently heard a high school principal comment to his faculty on the fact that at the end of a certain

marking period the relation between the marks in course and the rating of the pupil's "attitude" was consistently very high. He expressed the opinion that teachers were too apt to fall into the error of considering "effort" and "achievement" synonymous. It is only human nature to react favorably to the pupil always on time, who works industriously, who seems interested and is always ready, even anxious to be helpful. It is equally human to be irritated by the boy who looks out of the window, who never gets assignments on time, who is careless and untidy in his work and who, in spite of this, seems to acquire knowledge. "Achievement", "attitude" and "effort" are so nearly kin that a busy teacher provided with no instrument of measurement beyond her own opinion is at a loss to separate them.

Evidence has been offered by many investigators¹ in support of the statement that the school is attempting to level the achievement of all pupils to the average. If it is needed, Chart 13 will add to this store of evidence. Here is presented the distribution of the Intelligence Quotients of this group from those which were approximately two and one half standard deviation units below the mean I. Q. to those the same distance above, with the corresponding average Stanford Achievement Test increase in three years for pupils of these given I. Q.'s. It is true that there is close relationship between these two measures: as one increases, the other increases also, but, the achievement gain is consistently **above** the I. Q., for those pupils below the average intelligence of the group, and **below** the I. Q. for those pupils above the group mean in mental ability. This would seem to indicate that most of the attention of the teaching staff is given to those less able pupils in an attempt to bring them up to average, and that the brighter children are not required to show a performance commensurate with their ability. The whole emphasis of a class might be changed if such records as this could be furnished to the teachers, showing the continuing developing histories of the pupils.

¹ cf. nos. 10, 96, 109 in bibliography.

Summary and Discussion

A. Summary

1. Pupils tend to hold their initial rank on successive tests, except where the initial score was so high that no appreciable gain could be made. In other words, pupils who tested low on the first test, likewise tested low on the second and succeeding tests and vice versa. It will be noted from Tables 36 and 39 that the mean gain added to the initial grade equivalent of the Stanford Achievement composite score does not shift the position of the original groups to any extent.
2. There is correlation between the amount of gain made in school grade status and the amount of gain in the Stanford Achievement Test. But the mere fact of the existence of relationship between the gains of these two measures is not a sufficient basis for promotion or retardation. One measure may increase as the other measure increases, but this is no indication that they increase in like amounts or that the needs of the individual pupils are being met.
3. Achievement gain below the average is accompanied by a correspondingly larger grade gain, likewise below the average. However, achievement gain above the average is accompanied by a correspondingly lower grade gain.
4. In Washington, intelligence below average is accompanied by achievement above the intelligence level, but below the mean; while intelligence above the average is accompanied by achievement below the intelligence level, but above the mean. This seems to indicate an attempt to level the performance of all pupils to the average performance of the group.

B. Discussion

The college has been year by year increasing its efforts to know the kind and quality of the applicant for admission. Every means possible is and should be taken to know something of these candidates and their probable chances of academic success, before responsibility for them is accepted. The senior high school is beginning to show the same attitude toward the students sent on to it from the junior high school, not for the same purpose perhaps as the college, but in an attempt to suit its offerings to the needs of the wide range of talent included in the ever increasing numbers of registrants in high school. Such efforts to know pupils before prescribing for their educational needs should not stop here. It is the business of the junior high school to know more of the incoming pupil than the meager record he brings from the elementary school will show. And it should be the business of the elementary school to find out everything possible about the pupil who presents himself to the kindergarten or the first grade. Cole¹ says that the educational lock-step begins on the first day in school, but that it can be prevented on the fifth day. But it can only be broken up by means of effective, accurate and objective information in the hands of a wise, interested and considerate counselor, who may or may not be a teacher.

¹ Cole, L. W., "Mental Age and School Entrance", *School and Society* Oct. 5, 1918, pp. 418-19.

CHAPTER V.

PUPIL ADJUSTMENT

The Articulation Commission recommended the use of case histories in dealing with promotion problems.¹ The committee report stressed the fact that use of the case method technique would help to reduce "teachers' inconsistencies in their judgment of pupils' fitness for promotion". It further emphasized the fact that having the complete picture of a child before him, the teacher will be more apt to consider all aspects of the pupil's development than to determine his placement upon any one or two considerations. "Undoubtedly", the report continues, "some of the failures reported in the study could have been avoided if the case method had been applied before the promotion lists were completed."

The school systems in which the study was conducted report that the case studies developed the consciousness on the part of teachers that promotion is an individual problem and that present questionable practices indicate that promotion is a problem which needs careful analysis and study".

Maladjustment is rapidly becoming another catch word in the educational vocabulary, which is used to cover a multitude of sins, both on the part of the individual and on the part of the institution. The psychiatrists have introduced the term to the school administrators and like most catch phrases, it is now applied to every pupil problem which can seemingly be answered in no other way. Teachers have long been aware of "problem cases" among their classes; but where these problems formerly were accepted as evidence of original sin and the culprit dealt with in a manner intended to serve as a warning to others, now these cases are

¹ Ninth Year Book Department of Superintendence—p. 34.

studied for the causes underlying the undesirable behavior in an effort to remove the cause, as well as to deal with the result in the usual emergency fashion.

This approach to the problem is positive rather than negative. Every child, bright or dull, is in some way an exception to the usual routine of the school, and should have his case considered on its individual merits. A "problem child" (the very term is negative) is not only the child who misbehaves, who resents authority, or who will not study. There are many real problems among the average pupils who go along through school regularly and attract no attention; and there are many more among the brilliant pupils, who seem to be so successful. When individuals have become lost in the mass, and interfere in no way with the running of the machinery, it is assumed that all is well. But all may not be well, and modern educational theory, like the modern medical ideal, is gradually crystallizing into a philosophy of prevention rather than a method of cure.

A new technique in handling pupils is slowly gaining confidence in the minds of school executives. It is the technique long used by the social worker known as the case method. The case method is nothing more nor less than as **complete** a history of the individual's development as it is possible to obtain **cumulated** up to date. The important facts about this method are three:

1. The information must be as complete as possible.
2. The information must be continuous.
3. The information must be accurate and meaningful.

For the academic case history a fourth point should be added:

4. The information must be comparable.

Former Justice Holmes is credited with saying that the art of life consists in making correct guesses from insufficient information. That has too long been the art of education. The most progressive school administrators are convinced that it is impossible to educate a child unless enough information is at hand concerning this pupil's interests, abil-

ities, health, habits, home environment and possible future opportunities, so that the child may be placed in that section of the school environment most suited to his needs. It is guidance rather than instruction that a pupil needs first: after that the two should run parallel throughout his educational career.

One reason at least for the negative approach to this whole question of guidance and adjustment is that teachers attend to that which is annoying. The failing child, the stubborn child, the sullen, resentful pupil is decidedly annoying and obvious, so his case received the first attention of the educational case worker. Haggerty (74), Wickman (150) and others report that problem cases in school are primarily learning cases rather than conduct cases, and that in general, the troublesome pupils are of two kinds: 1—those for whom the work of the school is too hard and who finding they cannot master it, turn their energy into other channels; and 2—those for whom the work is too easy and who, being bored, seek more interesting fields to conquer.

Symonds (104) says that effective learning takes place only when pupils are happy in their work and feel a satisfaction in it. Therefore, good pupil adjustment is necessary for good pupil achievement. Better methods of instruction, more opportunity for expression of individual differences, bigger and finer school plants with better facilities for all phases of the educational process are all necessary and important. But none of them, according to Washburne, will make unnecessary "thoughtful, understanding personal guidance of individual children."

The Pennsylvania Study is "seeking a basis of judging values that is more consonant with what we know to be the individual differences in ambition, in capacity, in the will to work, and in the many other qualities of the students with whom we deal".¹ Such a judgment can only be made if all the facts about a pupil's development are known and are at hand in the form of continuing, comparable, and meaningful records.

¹ Proceedings—Association of Colleges and Secondary Schools, Middle States and Maryland, 1928, pp. 278.

The record used for this purpose in the Pennsylvania Study is the form known as the "American Council Cumulative Record Folder". It is a very comprehensive and complete folder which is described in detail in a Supplement to the Educational Record (117). This is not the place to launch a description of various record forms, with their advantages and disadvantages. The purpose of this discussion is rather to see if cumulative case histories, such as are being compiled in Pennsylvania, would have been of any assistance in preventing some of the maladjustments that are evident from the data previously presented.

Six cases will be presented here that are taken from the records of the Pennsylvania Study. They are used here through the courtesy of the director of the Pennsylvania Study, Dr. William S. Learned, of the Carnegie Foundation for the Advancement of Teaching. All distinguishing characteristics of these records have been removed, but the facts have not been changed in any way. Except for the name of the pupil, counselor and school, and the place of birth, the record is exactly as it is in the school system. The portion of the record shown is the upper half of the American Council record which contains the graph of the pupil's educational development. A complete record with a discussion of the case and an explanation of the symbols used will be found in the appendix.

Most cases which come to the attention of a teacher or school investigator are in the beginning learning cases. A pupil has failed of promotion, or a pupil is totally uninterested in class and annoys the others by his lack of attention, or a pupil is accelerated and cannot keep up with the grade to which he was advanced, all of these immediate causes, bring a child to the attention of the class room teacher or the counselor. From this starting point, the trail widens to include his home and social background, his health, his attitudes, interests and preferences, everything in short that could shed any light on the symptom first shown, his maladjustment in school. These cases are simplified if such complete records are available, but as mentioned above, because they were annoying they would in any case have come to the attention of the counselor.

PHOTO

Some of the cases briefly described here, are presented to show how such records can be used to detect cases that may become annoying either to the school or to society, and having recognized them, to adjust them.

1. The Case of F. Z.

F. Z. entered the junior high school when he was thirteen years and four months old, just within the normal age limit for the seventh grade. His record presented from the sixth grade indicated that he was somewhat below average, although his mark in reading was B. However, his test results in January 1928 could have given some information. He had an I. Q. of 75 on the basis of the Illinois Intelligence Test and his achievement was equal to the average performance of a pupil in the low fifth grade. According to age percentiles¹ on the Stanford Achievement Test, his score is the equivalent of that of the lowest ten per cent of his age group. F. Z. was probably not listed in his school as a problem: he was promoted regularly every semester, although his marks were very low, frequently failing. When he did not return to school in September 1931, his record was checked, and it was discovered that he had become sixteen in the previous June. His case was returned from the attendance office, his withdrawal was duly recorded—"legal age", and his card was filed in the inactive file.

What implications are in this boy's educational picture for the educational officer of an institution? In the first place, the school estimate of his ability agreed closely with objective measures of his achievement and intelligence. That being the case, on what basis was he promoted each semester? Mastery of subject matter? His marks deny that possibility. Age? Probably. Admitting this, was any provision made to meet this boy's educational and vocational needs? What were these needs?

¹ These percentiles were made for use with the Pennsylvania Study.

From the complete record the information is gained that his father is a Lithuanian laborer who came to this country about 1900. F. Z. is the youngest of four children. He has always had a bi-lingual adjustment to make, his mother speaking no English and his father very little. His teachers rate him below average in leadership, emotional control, industry and responsibility, and average in charm. He is interested in athletics, in the sixth grade he won a swimming medal; he is clever at art work; he has kept a school bank account for three years. Additional information from his school record shows that he is above average in art, industrial training and physical education.

What inconsistency is to be noted in the treatment of this boy's case? Consecutive, objective tests show him to be very much below average and his school record agrees. However he was promoted, grade by grade, and withdrew, having "been through" junior high school. Was it the business of the school to inquire into these other facts of this child's life, except as they were necessary for school records? In view of his background should a differentiated curriculum have been offered him, that would have stressed the manual arts and that would in all probability, have been valuable to him in the future environment most certainly to be his? What influence will his school career be in his life? What influence could it have been?

2. The Case of C. W.

C. W.'s case is, educationally, the opposite of F. Z.'s. He is one of those fortunate deviates whom Terman¹ ranks in the highest one per cent of intelligence. Here, too, the school estimate of C. W.'s performance agrees with objective data. This boy entered junior high school when he was ten years and six months old, at least one year and a half under-age. Educationally, on the basis of his composite Stanford Achievement Test

¹ Terman, L. M.—*The Measurement of Intelligence* p. 78.

1	C.W.						1-6-18		M F W C								
LAST NAME		FIRST NAME		MIDDLE NAME		RELIGION		DATE AND PLACE OF BIRTH		SEX		COLOR					
2 YEAR		1928		1929		1930		1931		1932							
GRADE ACHIEVED		10+ 6A 7B		10+ 7A 8B 8A		9B		10+ 9A 10P 10A									
4 AGE		18-6 1Q 167		15-2 1Q 134				18-5 1Q 135									
MENTAL																	
CHRON.		10		11		12		14									
5		1 ELEM. SCH. RECORD		3 J.F.M. 4 AP.M.JE. 5 JU.A.S. 6 O.N.D.		7 J.F.M. 8 AP.M.JE. 9 JU.A.S. 10 O.N.D.		11 J.F.M. 12 AP.M.JE. 13 JU.A.S. 14 O.N.D.		15 J.F.M. 16 AP.M.JE. 17 JU.A.S. 18 O.N.D.		19 J.F.M. 20 AP.M.JE. 21 JU.A.S. 22 O.N.D.		23 J.F.M. 24 AP.M.JE. 25 JU.A.S. 26 O.N.D.		27 J.F.M. 28 AP.M.JE. 29 JU.A.S. 30 O.N.D.	
6		St Ach St Read St Arith St Sci St Hist St Lang St Dict		Int		St Ach St Read St Sci St Hist St Lang St Dict		Am Hist Int		St Ach St Read St Sci St Hist St Lang St Dict		Int		P.P.Sci Jr Lat			
7		A		A		A		A		A		A		A		A	
8		98		93		95		93		95		93		95		93	
9		A		A		A		A		A		A		A		A	
10		B		B		B		B		B		B		B		B	
11		84		90		84		90		84		90		84		90	
12		B		B		B		B		B		B		B		B	
13		69		85		69		85		69		85		69		85	
14		C		C		C		C		C		C		C		C	
15		50		80		50		80		50		80		50		80	
16		C		C		C		C		C		C		C		C	
17		31		75		31		75		31		75		31		75	
18		C		C		C		C		C		C		C		C	
19		16		70		16		70		16		70		16		70	
20		D		D		D		D		D		D		D		D	
21		7		65		7		65		7		65		7		65	
22		F		F		F		F		F		F		F		F	
23		2		2		2		2		2		2		2		2	
24		F		F		F		F		F		F		F		F	
25		F		F		F		F		F		F		F		F	
26		F		F		F		F		F		F		F		F	
27		F		F		F		F		F		F		F		F	
28		F		F		F		F		F		F		F		F	
29		F		F		F		F		F		F		F		F	
30		F		F		F		F		F		F		F		F	
31		F		F		F		F		F		F		F		F	
32		F		F		F		F		F		F		F		F	
33		F		F		F		F		F		F		F		F	
34		F		F		F		F		F		F		F		F	
35		F		F		F		F		F		F		F		F	
36		F		F		F		F		F		F		F		F	
37		F		F		F		F		F		F		F		F	
38		F		F		F		F		F		F		F		F	
39		F		F		F		F		F		F		F		F	
40		F		F		F		F		F		F		F		F	
41		F		F		F		F		F		F		F		F	
42		F		F		F		F		F		F		F		F	
43		F		F		F		F		F		F		F		F	
44		F		F		F		F		F		F		F		F	
45		F		F		F		F		F		F		F		F	
46		F		F		F		F		F		F		F		F	
47		F		F		F		F		F		F		F		F	
48		F		F		F		F		F		F		F		F	
49		F		F		F		F		F		F		F		F	
50		F		F		F		F		F		F		F		F	
51		F		F		F		F		F		F		F		F	
52		F		F		F		F		F		F		F		F	
53		F		F		F		F		F		F		F		F	
54		F		F		F		F		F		F		F		F	
55		F		F		F		F		F		F		F		F	
56		F		F		F		F		F		F		F		F	
57		F		F		F		F		F		F		F		F	
58		F		F		F		F		F		F		F		F	
59		F		F		F		F		F		F		F		F	
60		F		F		F		F		F		F		F		F	
61		F		F		F		F		F		F		F		F	
62		F		F		F		F		F		F		F		F	
63		F		F		F		F		F		F		F		F	
64		F		F		F		F		F		F		F		F	
65		F		F		F		F		F		F		F		F	
66		F		F		F		F		F		F		F		F	
67		F		F		F		F		F		F		F		F	
68		F		F		F		F		F		F		F		F	
69		F		F		F		F		F		F		F		F	
70		F		F		F		F		F		F		F		F	
71		F		F		F		F		F		F		F		F	
72		F		F		F		F		F		F		F		F	
73		F		F		F		F		F		F		F		F	
74		F		F		F		F		F		F		F		F	
75		F		F		F		F		F		F		F		F	
76		F		F		F		F		F		F		F		F	
77		F		F		F		F		F		F		F		F	
78		F		F		F		F		F		F		F		F	
79		F		F		F		F		F		F		F		F	
80		F		F		F		F		F		F		F		F	
81		F		F		F		F		F		F		F		F	
82		F		F		F		F		F		F		F		F	
83		F		F		F		F		F		F		F		F	
84		F		F		F		F		F		F		F		F	
85		F		F		F		F		F		F		F		F	
86		F		F		F		F		F		F		F		F	
87		F		F		F		F		F		F		F		F	
88		F		F		F		F		F		F		F		F	
89		F		F		F		F		F		F		F		F	
90		F		F		F		F		F		F		F		F	
91		F		F		F		F		F		F		F		F	
92		F		F		F		F		F		F		F		F	
93		F		F		F		F		F		F		F		F	
94		F		F		F		F		F		F		F		F	
95		F		F		F		F		F		F		F		F	
96		F		F		F		F		F		F		F		F	
97		F		F		F		F		F		F		F		F	
98		F		F		F		F		F		F		F		F	
99		F		F		F		F		F		F		F		F	
100		F		F		F		F		F		F		F		F	
101		F		F		F		F		F		F		F		F	
102		F		F		F		F		F		F		F		F	
103		F		F		F		F		F		F		F		F	
104		F		F		F		F		F		F		F		F	
105		F		F		F		F		F		F		F		F	
106		F		F		F		F		F		F		F		F	
107		F		F		F		F		F		F		F		F	
108		F		F		F		F		F		F		F		F	
109		F		F		F		F		F		F		F		F	
110		F		F		F		F		F		F		F		F	
111		F		F		F		F		F		F		F		F	
112		F		F		F		F		F		F		F		F	
113		F		F		F		F		F		F		F		F	
114		F		F		F		F		F		F		F		F	
115		F		F		F		F		F		F		F		F	
116		F		F		F		F		F		F		F		F	
117		F		F		F		F		F		F		F		F	
118		F		F		F		F		F		F		F		F	
119		F		F		F		F		F		F		F		F	
120		F		F		F		F		F		F		F		F	
121		F		F		F		F		F		F		F		F	
122		F		F		F		F		F		F		F		F	
123		F		F		F		F		F		F		F		F	
124		F		F		F		F		F		F		F		F	
125		F		F		F		F		F		F		F		F	
126		F		F		F		F		F		F		F		F	
127		F		F		F		F		F		F		F		F	
128		F		F		F		F		F		F		F		F	
129		F		F		F		F		F		F		F		F	
130		F		F		F		F		F		F		F		F	
131		F		F		F		F		F		F		F		F	
132		F		F		F		F		F		F		F		F	
133		F		F		F		F		F		F		F		F	
134		F		F		F		F		F		F		F		F	
135		F		F		F		F		F		F		F		F	
136		F		F		F		F		F		F		F		F	
137		F		F		F		F		F		F		F		F	
138		F		F													

score, he was at least four years over-age for the seventh grade. He has consistently maintained this performance level for the last four years. Since C. W. cannot legally leave school until 1934 he will probably graduate from high school. What will he do then? Go to college?

His record shows that he is the only child of a laborer, who has had only an elementary school education. The fact that he is an only child makes his chances for college considerably better than if he were the oldest of several children; but the father's occupation suggests financial difficulties that will have to be met. C. W. thinks he would like to be a lawyer or a business man. Will the school simply graduate this boy with high honors, giving him the usual college guidance, which consists in discussing entrance requirements and courses of study? Does the school have a responsibility to do more, if it has provided him with the regular high school opportunities?

Here are two extremes, both progressing regularly through the same grades. In each case the school's judgment of academic success is fair. But each case presents latent potentialities of difficulties that might in some measure have been met, if the institution had accepted the idea of educating the whole boy, not just marking him on his educational accomplishments. One has the type of mind, and personality characteristics according to his teachers' ratings, that we associate with leadership and initiative: the other, less fortunate, is the type which Finney (13) says should be educated for "followership". Both need guidance that should be available as a part of their education, not merely as to the courses they will take for admission to college, but wise, sympathetic and intelligent counsel that will help them to integrate their lives. No better description of such a guidance program can be given than that which Dean Hawkes has described as necessary in a college.

"The facts that we wish to discover about the individual do not merely concern the level of his intellect. They have to do with his heritage; to this extent they are biologic. They have to do with his background and his experience; to this extent they are social. They have to do with his resources; to this extent they are economic. They have to do with his ambitions, tastes and dreams; to this extent they call for the friendly and wise counselor. In any case as complete and sympathetic and objective a knowledge of the boy as it is possible to obtain must be gained in order that we may help to reveal the young man to himself, and that we may at least enable his advisers to avoid giving him bad advice".¹

If it is true that the differentiated needs of pupils are greater at six than at sixteen, then more than ever, such help should be available to elementary school pupils, and it is the responsibility of the school to provide such intelligent and complete counsel for all its pupils.

3. The Case of R. F.

R. F. entered junior high school when she was thirteen years and six months old, about a year over-age for the low seventh grade. Her record shows a consistently low I. Q., varying only six points in three years, on three tests, the Illinois, the Otis Intermediate and the Otis Higher examinations. Her Stanford Achievement record shows a slight downward trend during three years, with a performance level from two to four years below her grade status. However, R. F. is rated a fair pupil by her teachers, although her marks show surprising peaks. Only once, however, in three years does she fail a course; this is in 1931 when she fails history. Her school record shows that in June 1930 she was accelerated, skipping from the high eighth to the high ninth grade.

¹ Hawkes, H. E.—*The Liberal Arts College In The University*, p. 7.

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How can this be justified? If the picture of this girl had been before the teacher promoting her, the inconsistency of such an acceleration would have been obvious.

However, from a discussion with one of her teachers, it is logical to infer the underlying basis for this advancement. Her mother is dead. The father is a plumber by trade, a Roumanian by nationality. This information was on her record. The teacher supplied additional items to the effect that he was out of work and paid for the rooms which he and R. F. shared by doing odd jobs around the boarding house. The girl herself is sweet and docile; she is very clever with her needle and makes every effort to make a good appearance. She keeps her own and her father's clothes clean and mended, keeps their room neat and does everything she can to take her mother's place.

In school she is always pleasant, always ready to help, never complains of her hardships. In short, she has a charming personality, a desire to please and a willingness to conform in every way. She hopes to be either a piano teacher or a bookkeeper, both occupations rather far afield from the possibilities indicated by her ability and achievements. Without doubt, this child needs the friendship and interest which her teacher was ready to give. But she should have had an intelligent appraisal of her potentialities and a constructive program planned for her that would offer her a reasonable chance of success. Acceleration was not the solution for her difficulties and was in no way consistent with her demonstrated performance.

4. The Case of H. W.

H. W.'s record presents a contrasting picture. His I. Q. is well above average: 137 on the Illinois test; 124 on the Otis Intermediate test and 114 on the Otis Higher examination. He is of normal age for his grade. His achievement on the Stanford Achievement test is always equivalent to a grade performance high-

er than his grade position. Yet his school record varies from A to E, not in different subjects, but in the same subjects. It is hardly reasonable to suppose that his mind really worked in such gyrations. H. W.'s case is not difficult to read. He is one of those whom Haggerty describes, who found the work of the grade in which he was placed too easy for him and sought other fields to conquer. One of his teachers told the author that he was just a "trouble maker"; he wouldn't pay attention; he "distracted" the other pupils; and, she added, "I know he does it just to annoy me". The investigator is not surprised to find that this boy is not promoted in February 1930. The harassed teacher has no other means at hand with which to cope with the annoyances which he invents to fill his free time.

The reasons assigned by the teacher for this failure on a "non-promotion report" were:

1. poor habits of study
2. inattention
3. carelessness
4. does not make up work for absence
5. uninterested
6. lacks ability
7. lacks ambition
8. lacks originality
9. lazy

The suggestion was made that items six and nine were untenable in the light of recorded data. The reply was that though he might be bright enough he was lazy; for even though he did show on the Stanford test that somewhere he had acquired knowledge, "he certainly didn't get it in school".

What was the result of this failure? Did H. W. apply himself more diligently? Did his work markedly improve? Did his attitude change? The record on the graph shows the degree of change in his school work. A report from his counselor in February 1932 reads, "no vocational interest; no interest in going to

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college; lacks ambition; says he may not finish high school". From the point of view of the school it seems impossible to reach him. Bored by repeating work already familiar, irritated by routine for which he can find no reason, the only release he sees is to leave school as soon as he can.

5. The Case of M. L.

This little girl entered the seventh grade when she was just about twelve years old. In 1928 on the basis of intelligence she is average, but on the basis of achievement she is one grade and a half below her grade status and in the lowest quarter of her age group. Her performance on this test, measured by composite scores and subject scores, tends to decrease each year she remains in school. In only two of thirty-nine standard tests recorded during the last four years does she achieve a rank above the fiftieth percentile: in American history in 1929 and in the language usage subtest of the Stanford Achievement in 1931. On the other hand, during four and one half years in school she has only three marks lower than C: E in reading in 1928, D in English in 1931 and D in book-keeping in 1932. Except for these three instances, her record is about a B average. Several times she receives A, but there are enough C's to balance. It is interesting to note that in 1929 she received B and A in nature study and geography; in 1930 B and A in geography and science and in 1931, C in science. However in 1929 her science score on the Stanford Achievement subtest was in the tenth percentile; in 1929, on the Pittsburgh general science test she reached the twentieth percentile, and on the Stanford science section she again equalled the tenth percentile. In 1930 her geography score was about the equivalent of the tenth percentile; in 1931 it dropped to a level of the lowest five per cent. In June 1931, after she had received A each semester in science, her score on the Ruch-Popenoe general science

test was in the lowest one per cent of ninth grade pupils in Pennsylvania. Yet this pupil was regularly promoted each year.

If such a picture had been before the teachers responsible for this pupil, would not some other adjustment of her case have been sought?

6. The Case of Ed.

Ed is rated above average by his teachers in charm, emotional control, and industry and about average in leadership and responsibility, but some way he cannot seem to convince them that the store of knowledge which he possesses is effective learning. Each year for four years he has maintained a level of achievement on the whole somewhat in advance of his grade location; his I. Q. ratings are consistently high; he has almost never been absent. Yet his school record shows erratic differences: from D to A in geography in 1929-30 and then down to B in science in 1931; from C to D to E in arithmetic and algebra in 1930-31; from D to E to B to C to E in English during the three years from 1928-1931. However his test record shows no such variations. His general science test result places him above the ninety-fifth percentile in 1928; his Stanford science subtest is at or above the ninetieth percentile in 1929-30 and 1931. In June 1931, after he had received D in algebra he equalled the score of sixty-six per cent of the Pennsylvania ninth grade pupils. That same semester he failed English, but on the Cross English test he did better than eighty per cent of pupils in the ninth grade in the whole state. In June 1929 he was not promoted to the eighth grade, so that he had to repeat the work of the high seventh grade.

Has this pupil failed or has the school failed? Ed is a conscientious, puzzled boy, who doesn't quite know why he wasn't promoted. This boy will in all probability not leave school. His father is a chemist. There is one other child in the family. But this difference is to be noted on Ed's record. In 1929 and 1930 he

1	Ed.										7-7-16										M F W C	
2 YEAR		LAST NAME		FIRST NAME		MIDDLE NAME		RELIGION		DATE AND PLACE OF BIRTH		SEX		COLOR								
3 GRADE		ACHIEVED		1928		1929		1930		1931		1932										
4 AGE		MENTAL		13-6		14-6		16-6		16-6												
5		CHRON.		12		13		14		15		16										
6		TELEM. SCH. RECORD		3 J.F.M. 4 A.P.M.J.E. 5 J.U.A.S. 6 O.N.D.		7 J.F.M. 8 A.P.M.J.E. 9 J.U.A.S. 10 O.N.D.		11 J.F.M. 12 A.P.M.J.E. 13 J.U.A.S. 14 O.N.D.		15 J.F.M. 16 A.P.M.J.E. 17 J.U.A.S. 18 O.N.D.		19 J.F.M. 20 A.P.M.J.E. 21 J.U.A.S. 22 O.N.D.		23 J.F.M. 24 A.P.M.J.E. 25 J.U.A.S. 26 O.N.D.								
7		PERCENTILES		A		A		A		A		A		A								
8		GRADES		98		93		90		85		80		75								
9		ACHIEVEMENT TESTS AND SCHOOL MARKS		St. Hist.		St. Hist.		St. Hist.		St. Hist.		St. Hist.		St. Hist.								
10		STANDARDIZED TESTS		St. Read.		St. Lang.		St. Ach.		St. Dict.		St. Arith.		St. Sci.								
11		LOCAL PERCENTILES		69		65		60		55		50		45								
12		C		Eng. Math.		Sci. Math.		Math.		Eng.		Math.		Eng.								
13		D		Hist.		Geoq.		Math.		Math.		Math.		Eng.								
14		F		Eng. Hist.		Eng. Hist.		Math.		Math.		Math.		Eng.								
15		F		Ill. Int.		82																
16		STUDIES, CREDITS, GRADES		St. Ach. 567		Eng. D		Eng. B		Eng. C		Eng. D		Eng. D								
17				St. Read 169		Geoq. D		Geoq. A				Crafts C.										
18				St. Arith 160		Hist. D		Hist. C		Hist. B												
19				St. Sci. 35		Math. C		Math. C		Math. D		Alq. E										
20				St. Hist. 58		Sci. C		Sci. B		Sci. B												
21				St. Lang. 29		P. Ed. B		P. Ed. B		Elec. C		Mach. C										
22				St. Dict. 116		Art. C		Art. C		Art. B												
23				Pgh. G. Sci. 90		Org. D		M. Drq. D		M. Drq. C												
24		DISCIPLINE																				
25		COUNSELORS																				
26		NAMES AND TYPES OF SCHOOLS																				
27		REASONS FOR LEAVING																				
28		NUMBER OF DAYS ABSENT																				

indicated that he wanted to go to Carnegie Tech and study mechanical engineering. In 1932 it is evident that he has entered the "shop" course in the senior high school and given up his idea of a professional education. Of course, this may be due to a number of reasons that are not evident from the information at hand. But it is also possible that because of his low record in school he may have been advised not to try for college. If the objective evidence had been at hand to compare with his school record, a different solution might have been found.

One of the most poignant appeals for guidance for the youth of the world is to be found in that recent remarkable book, "Twenty Thousand Years in Sing Sing." Warden Lawes is not ostensibly writing an educational treatise, but all persons interested in human beings, especially young human beings, would do well to read Chapter 11 of this book and ponder. One of the most significant sentences in this bulky volume is on page 411: "Guidance rather than deterrence is the answer to crime." Guidance rather than deterrence is the answer to most educational questions.

Retardation is no solution for the cases of H. W. and Ed. A fear of failure will not incite all pupils to work harder. But failure will induce attitudes of mind, habits of defeat, a feeling of inferiority, that may be not only harmful to the individual personality, but a menace to society. On the other hand, the able pupil who does not have to exert himself to pass, will be trained in habits of mediocrity, carelessness, and will have time to exercise his superior ability in other channels as was noted in the case of H. W. Every pupil should be given work to do at which he has some chance of succeeding. Every teacher should have a record of the capacity, present achievement and past development of the pupils in her class. The record of itself will not work the charm of really knowing a student, but such knowledge cannot be had without the complete information which a record of this kind can give. Individual differences are found in all kinds of classification. But to be forewarned of

these differences is to have the opportunity to modify a child's environment so that what seems like certain defeat may be turned into success.

Early diagnosis of learning difficulties may prevent their becoming behavior difficulties, and thus forestall maladjustment. But this does not mean that in such a case guidance is completed, and need be exercised no further for this pupil. It is safe to say that guidance is never complete, any more than education is ever finished. Guidance which is not continuous is like a chain in which a link is missing.

Richards (99) reports in a study in Baltimore in 1918 that one fact stood out in nearly every case referred to the child guidance clinic: in almost every instance the peculiar characteristics for which the child was referred could be easily traced to their first appearance in the early years of school, as early as the kindergarten—in other words, to a bad adaptive start.

Personnel programs are gradually seeping down into the elementary school. It may be logical that organized personnel programs began in college and high school. The need for help is most acute when a student is ready to leave school, but guidance at this point is too late. To be effective it must have been available at least as soon as formal education is begun, and continuously thereafter.

These cases may be open to criticism on the grounds that they are exceptional. To be exceptional should not be a just basis for criticism, but admitting that they are out of the ordinary, they should be, therefore, all the more significant. If such errors of appraisal are being made with cases so outstanding, and for whom these records were available, what errors of judgment are being made in the case of pupils who pass on from year to year and finally graduate, and for whom no such history of educational development is available?

CHAPTER VI

GENERAL SUMMARY AND CONCLUSIONS

This study has been an attempt to ascertain the degree of consistency between the school estimate of pupil educational development and objective measures of pupil ability and achievement, the bases on which promotion is made and the accuracy of school appraisal of individual cases as indicated by cumulative records of school progress. The estimate which the school places on a pupil's academic success or failure is usually indicated by his progress through the grades and his school marks. Other evidence of this success is to be found in percentages of over-ageness and under-ageness, not only chronological, but also educational and mental.

The data presented do not indicate that promotion as practised in the two systems under discussion, is recognition of progressive educational development. The regularity of promotion and consistency of the percentages of chronological over and under-ageness in Pittsburgh seem to indicate that promotion is on the "time-spent" basis. Pupils are promoted regularly in groups, which show almost no variation in numbers from one promotion period to the next. There is practically no consideration given to the measured achievement and intelligence of these pupils. This is shown by the fact that educational over-ageness does not change with the years and educational under-ageness increases. At the same time there are three times as many pupils mentally over-age for their respective grades as there are those who are mentally underage. The average school grade status either equals or is greater than the average performance of the group, indicating that in general the pupils are graded too high. The achievement and intelligence test records of those pupils retarded, accelerated or regularly promoted do show mean differences increasing

from the mean of those pupils retarded to that of those pupils who have been given extra promotions, but the overlapping in all measures for these three classes of pupils is so great that the inconsistencies in the treatment of individuals are at once apparent.

A study of the gains made in achievement for different intervals of time elapsed, reveals the fact that those pupils making the greatest gains in objective measures of their performance do not make the greatest gain in position; nor do those making the least gain in achievement make a comparable gain in school status. The facts are that at least in Pittsburgh, the amount of gain is no criterion for the amount of school progress, since some are promoted who have gained very little and some are retarded who have made relatively large gains.

In Washington the policy of promotion seems to be based on the theory of mastery of the subject matter of the grade. But here the pupils are graded much lower than the objective measures of their achievement and intelligence seem to warrant. Acceleration and retardation have been used in an attempt to adjust the offerings of the school to the needs and abilities of the pupils, but the school symbols of success, promotion and marks, do not show a consistent agreement with the accomplishments which these pupils demonstrate on the Stanford Achievement test. Their average performance is always higher than their school grade location. Likewise while chronological under-ageness increases and over-ageness decreases, educational over-ageness increases and educational under-ageness becomes practically negligible. It is true for these pupils also that the means of these different measures show constant increase from the means of those who were retarded to the means of those who were accelerated, but here again, there is much overlapping. This is particularly evident in the school marks of these pupils at the end of three years, when the average school mark of the pupils accelerated is lower than the average mark of those pupils regularly promoted.

There is much greater correlation between the gain in measured achievement and school grade status for this

group than for the Pittsburgh group, as would be expected if the contention is true that one system promotes on an age basis and one promotes on "subject-passed" basis. But here the gain in achievement is accompanied by a correspondingly larger gain in school when the achievement gain is below the average. When the achievement gain is above the average, the gain in school progress is smaller than the performance increment. This supports the statement that these pupils are graded too low.

The significance of any study of this sort is to be found in the constructive suggestions for the improvement of existing practices. Any satisfactory solution of this promotion problem requires that the question of grade interpretation be more or less definitely settled. School systems should announce clearly what their philosophy of pupil advancement is. If it is desirable to keep children with their own age groups, then provision should be made within each age group for differential needs and abilities. Freeman (14) describes this as horizontal and vertical classifications: horizontal, on the basis of age or development levels, vertical according to ability to learn within these levels.

On the other hand, if the idea of an elementary school education or a high school education is to have any qualitative implication, then the proper material for a grade should be determined and other provisions made for the necessary social adaptations of like age groups. If pupils must still be instructed in groups, and always with the same group, then "the course of study should be stated in terms of objective achievement grade by grade, so that teachers may know what their pupils are supposed to accomplish. . . . with allowances of course, first, for individual differences among pupils, the work of a grade not being required to be done by all with exactly the same degree of excellence; and secondly, for different courses of study for different types of pupils".¹

There are more superintendents of schools who believe that, in the elementary school at least, promotion should be

¹ Thorndike, E. L., "Elimination, Promotion and Retardation" p. 257.

an age basis than there are those who believe it should follow mastery of minimum curriculum units. More than 500¹ school executives were asked to check the following statements indicating by their reply which statement nearest described the elementary school as they believed it should exist ideally:

“a. The elementary school is an institution which takes children of varying physical and intellectual capacities who are approximately six years of age, and for six years offers them the educational opportunities which seem best suited to their needs. They get what they can, and when they are approximately twelve years of age they are promoted to the junior high school. If they have shown themselves to be above average in ability they may even be promoted at an earlier age ()

“b. The elementary school is an institution which takes children of varying physical and intellectual capacities who are approximately six years of age, and requires them to reach certain minimum standards of educational accomplishment before they are promoted to the junior high school. Unless they are of average ability or above, this may involve seven, eight, or more years of attendance in the elementary school; and promotion to junior high school at the age of thirteen, fourteen, or older ()”.

According to the returns from this questionnaire, 324 out of 555 superintendents of schools replying believe that an ideal six grade elementary school is the type represented in the statement under “a”. One hundred and seventy of these executives believe children should be held for certain minimum standards of educational achievement before they are sent on to the junior high school.

Similarly, when asked to check the statement expressing their opinions of an ideal junior high school, 348 out of 555 administrators replying, stated that the ideal junior high school, grades seven to nine, is “one which receives pupils

¹ Ninth Year Book—Department of Superintendence, p. 79.

from the elementary school who are approximately twelve years of age, and who have spent approximately six years in the elementary school, and offers them the educational opportunities which their capacities and accomplishments at the time of entering the junior high school seem to justify".¹ One hundred and thirty-eight superintendents, however, believe the junior high school should admit only those pupils who have successfully achieved a certain minimum performance in their previous school development.

Between these two concepts of existing school practices, there seems to be a middle path which is relatively untravelled. Certain progressive schools such as the Winnetka System, the Lincoln School in New York, the Bronxville School System and others are definitely trying to modify the offerings of the school so that every pupil will have always a sense of advancing, of moving ahead in achievement and acquisition, without repeating for the sake of some item missed, material already mastered.

It may need be asked if promotion is necessary in a school organization. Is it, after all, a means of administration, and should it be so considered? Must children progress in groups or grades through school, when modern educational theory is advocating on every side more attention to the individual? If once the idea that promotion is a symbol of academic success could be scrapped, there would no longer be a promotion problem! Then pupils could be frankly assigned to their chronological age group for administrative purposes and social activities, and when the time came for study, they could attend the instruction group most suited to their abilities and accomplishments. What would it matter if a ten year old were discussing the Napoleonic wars with a sixteen year old? Age is not what counts in history; ideas and background and ability to see relationships are the important things; when the history lesson is over, the ten year old will be just as effective a member of the group playing "Run, Sheep, Run" as the sixteen year old will be soliciting "ads" for the school paper;

¹ Ninth Year Book—p. 82.

and no sense of inferiority or superiority will come to either from the contact. During the class period they have met on a common level.

For instructional purposes, however, pupils should be grouped on the basis of ability, past achievement and present needs. Ability and past achievement should be measured by the best criteria available, reliable standard tests, if they are comprehensive enough to afford a pupil ample opportunities to register his learnings of whatever sort, from whatever source. Present needs can only be determined from a continuing and accurate case history presenting all the information about a pupil which is needed in order to diagnose his need adequately and to make the proper adjustment of his case. Such information in the hands of an intelligent and interested teacher or counselor would furnish a sound and logical basis for all promotion decisions.

Administrative difficulty is the real power preventing such a consummation of pupil advancement problems on the basis of individual merit. First, more teachers are needed, although the findings of the committee on Promotion Problems¹ concludes that "promotion plans for providing for individual differences of pupils through instruction require only slightly more teachers than schools making no such provisions". But a different type of teacher will be needed if such an organization is to be based on accurate and complete case histories of pupil development. If such cumulative studies are not the foundation of the organization, it will succeed no better than other attempts to break away from the mediaeval traditions of education, no matter how many teachers may be added to the staff.

Second, better measurement of the educational product should obtain. Educational and mental measurements are here to stay. Imperfect as they still are, they are more consistent and reliable than the subjective ratings of teachers. If they are administered scientifically, if they are scored accurately, and if they are interpreted wisely, they will prove a far saner basis for educational decisions

¹ Opus cited, p. 100.

than the usual school marks. Freeman¹ says, "The aim is not merely to measure the student's actual achievement and to classify him accordingly; it is also to discover his potential achievement and to stimulate him to attain it". The test will discover the pupil potentialities, but a teacher will have to provide the stimulus, and a clever teacher will be quick to seize the opportunity offered by such accurate meaningful measures.

Another administrative obstacle encountered many times, is the pupil accounting required by all states and cities. Pupil accounting is necessary, but it is possible to make it much simpler than it now is. State and city reports are bug-bears to teachers and often assume such proportions that the real center of education is shifted from the child to a statistical report. Records and reports are only useful to the extent that they provide a wider opportunity for knowing the strangers whom we presume to teach; if they are not used for this purpose, they are as someone has said, "only escape mechanisms set up by the researcher as a means of busy work"!

Fourth, no matter what plan is adopted, the administration of the plan is quite as important as the plan itself. No scheme can be installed and then left to run itself. Additional and more efficient teachers are needed, better measurement is a necessity, comprehensive records are essential. But no project will succeed if the whole is not motivated by a keen, enthusiastic and tolerant executive who is as familiar with the educational output of his system as he is with the architect's plans for the building or the report of the finance committee.

Many enticing by-paths presented themselves in the course of this limited investigation. They offer interesting material for follow-up studies which should shed light on this complex question.

Are pupils sometimes promoted on the basis of achievement in some one subject? Similarly, are they denied promotion because of inferior performance in some one sub-

¹Freeman, F. N., "Bases on Which Students Can Be Classified Effectively", *School Review*, December 1921, pp. 735-45.

ject? The material for such studies is at hand in the specific subject scores on these tests, together with school marks in these subjects. A study of individual pupil idiosyncrasy on the basis of continuing records of the same pupils would tell much about peculiarities in pupil development. Individual growth curves of acquired knowledge and mental ability can only be plotted from such consecutive pupil measures. Courtis (66) has done some most interesting work in growth and has established the fact long believed, that individuals do not grow, educationally, any more evenly than they grow physically. Such theories could be supported or disproved by such data as these here presented. These and other questions are awaiting answers from similar studies.

These are the facts for two small groups of pupils from two school systems; the great advantage of this investigation lies in the fact that it presents evidence for these pupils for half the elementary school life of the one group, and for the junior high school life of the other. It is limited by the fact that little information is available concerning the health, social adjustment, home conditions or personalities of these pupils.

Perhaps the main principle of guidance is not to tell pupils of their virtues, but to try to show them their possibilities. So it is with this study.

APPENDIX

The following explanation of the American Council Cumulative Record Folder was prepared by Dr. William S. Learned of the Carnegie Foundation for the Advancement of Teaching for certain of the Pennsylvania Study Reports. It is a clear, concise description of the record itself and the technique of using it together with the interpretation of a complete case history cumulated on such a form.

STUDY OF THE RELATIONS OF SECONDARY AND HIGHER EDUCATION IN PENNSYLVANIA

Recording Achievement

The Study of the Relations of Secondary and Higher Education in Pennsylvania was begun in 1928 on the initiative of the Joint Education Commission appointed by the Association of College Presidents and the State Department of Public Instruction. The main purpose of the enquiry is, by means of cumulative objective measurements of an individual's attainments and progress, to establish a sound basis for educational guidance through whatever institutions he may attend, and into an economic employment that is suited to his abilities.

A feature indispensable for a program of adequate measurement is a record that is accurate, comprehensive, and significant. The Study has developed such a report, and with the results of three years' testing available, is now in a position to lay provisional results before the colleges. It should be made clear that the value of a thorough objective testing procedure and a careful record is not confined to pupils who are going to college. It is of equal, if not greater, importance in directing those who have little capacity for academic subjects but who are possibly gifted in other ways. The reason that the Study's present use of the record is confined to a college group now in high school is that the project originated in the problem of school-college requirements. The procedure can be most conveniently illustrated by applying it at this point.

The Graphic Cumulative Record

An appreciation of the educational significance of the Pennsylvania Study in its emphasis on "learning" pupils depends largely on a thorough understanding of the cumulative record employed and of the procedure for which it was devised. Both should be carefully studied. They are as scientific in character as circumstances will permit and are unusual in many respects; their advantages become apparent only after repeated use when the reader is fully accustomed to the symbols and the meaning of their relationships.

Some who have inspected the graphic cumulative record have found it "too complicated." This impression is due not only to the fact that the terms are unfamiliar but also to the fact that the record calls for much information that most institutions now treat casually or ignore

altogether. Any one who studies case histories as completely worked out on this record and then goes back to the current forms will usually realize at once how meagre and untrustworthy our present information is in most cases. The real question before us is not one of adapting a record to existing data but rather of improving the data as required by an adequate record. In other words *the record is not a bookkeeping convenience but an indispensable educational instrument*; those who are merely looking for an improved record system would do well not to adopt it.

It should be noted further that good draftsmanship is a point of cardinal importance. Unless it attracts those who ought to use it, a record loses much of its practical value. Crooked lines, irregular and careless entries, and poor lettering will soon make any record repellent. The ordinary list of grades suffers least from this cause, and therefore seems less "complicated." When well drawn, however, the graph and its supporting facts have proved to be by far the most trustworthy and revealing form in which an educational story can be told. If kept clear and accurate, the compact form of the record makes its use a pleasure.

Description of the record. The Graphic Cumulative Record consists essentially of a rectangular field designed to display graphically the relative positions of a pupil's achievement scores and ratings over a period of years on a scale that corresponds roughly to their actual distributions (see percentile scale of half-sigma intervals in the left margin). To facilitate the simultaneous use of teachers' percentage or letter grades a scale of approximate equivalents in these terms is added.

Heavy vertical lines separate the calendar years and represent January 1; divisions for the quarters follow, and the months are indicated in line 5. Any point on the chart has, therefore, both a qualitative and a chronological value without further identification. School attendance is represented by a solid line, vacations by dotted lines. Teachers' ratings and all subjective examination marks are indicated by open circles - ○; scores in objective, standardized tests, by solid circles - ●.

In the lower half of the card personal facts of importance are correlated with the chronological arrangement of the chart above.

Advantages of the record. The outstanding advantages of this record and of the procedure that it involves are two;

(a) It displays a graphic sequence of symbols covering a period of years which enables the reader to appreciate at a glance both the quality, the amount, and the consistency of a pupil's intellectual progress.

(b) It provides in a variety of fields not only the teachers' ratings of the pupil (open circles ○) but also standardized test scores (solid circles ●) that are free from the subjective uncertainties of the teacher and that disclose in strictly comparable terms the relative achievement of this pupil in comparison with hundreds of others of the same age all over the country.

Sample history. The following sample record should be examined with minute care. It is a true history, except in minor particulars, as far as June, 1928. From that point, known facts from other cases are introduced to illustrate a complete record which would serve as the final basis for admission to college.

The size of the card has been reduced for convenience. The actual dimensions of the record are $11\frac{1}{2} \times 17\frac{1}{2}$; those of the reproduction, 9×14 .

1		Crawford Margaret Eleanor			4-27-14 Penna.		M O C								
LAST NAME		FIRST NAME		MIDDLE NAME		RELIGION		DATE AND PLACE OF BIRTH		SEX		COLDR			
2 YEAR		1925		1926		1927		1928		1929		1930		1931	
3 GRADE		6		7		8		9		10		11		12	
4 AGE		10 = 137		10 = 126		10 = 135		10 = 132							
5		11		12		13		14		15		16		17	
6		18		19		20		21		22		23		24	
7		25		26		27		28		29		30		31	
8		32		33		34		35		36		37		38	
9		39		40		41		42		43		44		45	
10		46		47		48		49		50		51		52	
11		53		54		55		56		57		58		59	
12		60		61		62		63		64		65		66	
13		67		68		69		70		71		72		73	
14		74		75		76		77		78		79		80	
15		81		82		83		84		85		86		87	
16		88		89		90		91		92		93		94	
17		95		96		97		98		99		100		101	
18		102		103		104		105		106		107		108	
19		109		110		111		112		113		114		115	
20		116		117		118		119		120		121		122	
21		123		124		125		126		127		128		129	
22		130		131		132		133		134		135		136	
23		137		138		139		140		141		142		143	
24		144		145		146		147		148		149		150	
25		151		152		153		154		155		156		157	
26		158		159		160		161		162		163		164	
27		165		166		167		168		169		170		171	
28		172		173		174		175		176		177		178	
29		179		180		181		182		183		184		185	
30		186		187		188		189		190		191		192	
31		193		194		195		196		197		198		199	
32		200		201		202		203		204		205		206	
33		207		208		209		210		211		212		213	
34		214		215		216		217		218		219		220	
35		221		222		223		224		225		226		227	
36		228		229		230		231		232		233		234	
37		235		236		237		238		239		240		241	
38		242		243		244		245		246		247		248	
39		249		250		251		252		253		254		255	
40		256		257		258		259		260		261		262	
41		263		264		265		266		267		268		269	
42		270		271		272		273		274		275		276	
43		277		278		279		280		281		282		283	
44		284		285		286		287		288		289		290	
45		291		292		293		294		295		296		297	
46		298		299		300		301		302		303		304	
47		305		306		307		308		309		310		311	
48		312		313		314		315		316		317		318	
49		319		320		321		322		323		324		325	
50		326		327		328		329		330		331		332	
51		333		334		335		336		337		338		339	
52		340		341		342		343		344		345		346	
53		347		348		349		350		351		352		353	
54		354		355		356		357		358		359		360	
55		361		362		363		364		365		366		367	
56		368		369		370		371		372		373		374	
57		375		376		377		378		379		380		381	
58		382		383		384		385		386		387		388	
59		389		390		391		392		393		394		395	
60		396		397		398		399		400		401		402	
61		403		404		405		406		407		408		409	
62		410		411		412		413		414		415		416	
63		417		418		419		420		421		422		423	
64		424		425		426		427		428		429		430	
65		431		432		433		434		435		436		437	
66		438		439		440		441		442		443		444	
67		445		446		447		448		449		450		451	
68		452		453		454		455		456		457		458	
69		459		460		461		462		463		464		465	
70		466		467		468		469		470		471		472	
71		473		474		475		476		477		478		479	
72		480		481		482		483		484		485		486	
73		487		488		489		490		491		492		493	
74		494		495		496		497		498		499		500	
75		501		502		503		504		505		506		507	
76		508		509		510		511		512		513		514	
77		515		516		517		518		519		520		521	
78		522		523		524		525		526		527		528	
79		529		530		531		532		533		534		535	
80		536		537		538		539		540		541		542	
81		543		544		545		546		547		548		549	
82		550		551		552		553		554		555		556	
83		557		558		559		560		561		562		563	
84		564		565		566		567		568		569		570	
85		571		572		573		574		575		576		577	
86		578		579		580		581		582		583		584	
87		585		586		587		588		589		590		591	
88		592		593		594		595		596		597		598	
89		599		600		601		602		603		604		605	
90		606		607		608		609		610		611		612	
91		613		614		615		616		617		618		619	
92		620		621		622		623		624		625		626	
93		627		628		629		630		631		632		633	
94		634		635		636		637		638		639		640	
95		641		642		643		644		645		646		647	
96		648		649		650		651		652		653		654	
97		655		656		657		658		659		660		661	
98		662		663		664		665		666		667		668	
99		669		670		671		672		673		674		675	
100		676		677		678		679		680		681		682	
101		683		684		685		686		687		688		689	
102		690		691		692		693		694		695		696	
103		697		698		699		700		701		702		703	
104		704		705		706		707		708		709		710	
105		711		712		713		714		715		716		717	
106		718		719		720		721		722		723		724	
107		725		726		727		728		729		730		731	
108		732		733		734		735		736		737		738	
109		739		740		741		742		743		744		745	
110		746		747		748		749		750		751		752	
111		753		754		755		756		757		758		759	
112		760		761		762		763		764		765		766	
113		767		768		769		770		771		772		773	
114		774		775		776		777		778		779		780	
115		781		782		783		784		785		786		787	
116		788		789		790		791		792		793		794	
117		795		796		797		798		799		800		801	
118		802		803		804		805		806		807		808	
119		809		810		811		812		813		814		815	
120		816		817		818		819		820		821		822	
121		823		824		825		826		827		828		829	
122		830		831		832		833		834		835		836	
123		837		838		839		840		841		842		843	
124		844		845		846		847		848		849		850	
125		851		852		853		854		855		856		857	
126		858		859		860		861		862		863		864	
127		865		866		867		868		869		870		871	
128		872		873		874		875		876		877		878	
129		879		880		881		882		883		884		885	
130		886		887		888		889		890		891		892	
131		893		894		895		896		897		898		899	
132		900		901		902		903		904		905		906	
133		907		908		909		910		911		912		913	
134		914		915		916		917		918		919		920	
135		921		922		923		924		925		926		927	
136		928		929		930		931		932		933		934</	

[illegible]

Case of Margaret Elinor Crawford

The record covers the school life of this child from the age of eleven to seventeen (line 4)* beginning in the second half of the sixth grade (line 3) which she entered in February (line 5), 1925 (line 2), at the Howard Elementary School (line 26).

The marks given by Margaret's teachers in earlier years are summarized on the left of the score frame. Her spelling is rated A, music and drawing, C, and all other subjects, B (cols. 1-2). A glance at her record as a whole shows that her teachers consider her a remarkably able pupil. Except for a C in writing at the end of the second semester, 1925 (col. 4), there are no marks below B during the entire six years and A ratings are frequent. Her standard test scores are heavily concentrated in the highest part of the card and in general run higher than the teachers' ratings. There is none below the 83rd percentile; eight only are below the 93rd percentile, and thirty-six are at or above the 98th percentile. This means that in the latter subject, more than 98% of the children of like age taking these tests scored below Margaret.

Details of the standard test scores are to be found on the reverse side of the card. For the sake of clarity these are much abbreviated on the chart. In May, 1925, 1926, and 1928, and in March of 1927, Margaret tested consistently in the 99th percentile in intelligence. The other tests of these years consisted of the Stanford Achievement tests—a group of ten tests in various subjects each having a separate score in addition to the score for the group. The latter is recorded as the "Stanford Achievement" score, ("St. Ach."). In Margaret's case the sections of the test spread slightly downward after the first year due to the increasing selection of the group on which the test is standardized and possibly also to the fact that the pupil is not doing her best because of constant association with inferior pupils. Since 1925 she has been ready for 10th grade work although compelled to sit through the 7th, 8th, and 9th grades and to work at their pace. Tests in new material in May, 1928, (col. 16)—Cross English test, Brown-Woody Civics, Junior Latin, and C. R. B. Algebra—place her in the 98th and 99th percentiles. These percentiles are based only on the local groups and are therefore indicated by crossed open circles - ⊗.

In the senior high school Margaret tests about equally well in all types of work. She took general science throughout the junior and senior years, and in May, 1929, took a special test prepared for college freshmen and scored in the 91st percentile. Her interest in science led her to do a large amount of supplementary reading that summer, and when she returned in October she repeated the test and raised her score to the 98th percentile (col. 22). This score she raised still higher in May, 1930 (col. 24). Thereafter she dropped science, but a year later, in 1931, she could still test to the 94th percentile in that subject (col. 28).

Latin was begun in the fall of 1927 and the Junior Latin test the following May showed Margaret at the head of the local group (col. 16), although the teacher gave her an A-. That this local score was a real achievement is shown by the standardized tests of 1929, 1930, and 1931—in all of which she gained the 99th percentile (cols. 19, 20, 24, and 28). In her junior year her Latin teacher suggested that she begin French by herself and gave her some preliminary lessons on the pronunciation. Margaret worked on grammar and easy reading during that summer and in the fall took the Columbia Research

Bureau French test, scoring in the 83rd percentile. On the strength of this performance she entered second year French and repeated the test twice during the school year, each time with noticeable improvement (cols. 26, 27, and 28).

It should be noted that in the latter part of the senior year Margaret had the opportunity in every field of her secondary study to demonstrate her attainment by means of comprehensive objective examinations. Through constant use as a part of her education these tests had become a matter of routine, and had gradually given her the attitude that knowledge, once acquired, was to be retained and deliberately improved for permanent use—not crammed for recitation and a term credit and then forgotten. It is apparent, too, that the school had given her encouragement in independent work by testing it and recording her achievement. Her special work in general science and in French have already been described. At the beginning of her first year in senior high school she applied for a test in ancient history in which she had long been interested, though she had taken little of it in school; the result in this test showed the same high quality as her other work (col. 18).

The personal history that parallels Margaret's intellectual development furnishes important items. Under notable accomplishments (line 31) are a prize essay in 1925, the reading of Barrie complete when twelve years of age, and, when thirteen, the reading and reviewing of all Shakespeare's historical plays during a summer vacation. She was an active club girl, occasionally an executive (line 35). In her early vocational choices (line 47) teaching, medicine and law rotate. She finally decides on teaching, then on college teaching, then on teaching of Latin and French.

Data on the back of the card indicates that Margaret comes from a normal American family in which the parents are without higher education (lines 61, 62). She has four brothers, three of whom have been to college (line 65). Her personality ratings can only be regarded as vaguely suggestive. Judgments on this point are equivocal since they lack definition of the behavior on which they are based.

Altogether Margaret's picture is that of a remarkably capable, steady, and independent mind developing admirably with an excellent background. She is undoubtedly a college risk of the first class.

*Note: The lines of the Record are numbered on the extreme left and the columns in line 5.

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